AN 16-35TS387-3

HANDBOOK OF
MAINTENANCE INSTRUCTIONS
for
TEST SET TS-387/U

Published under Joint Authority of the
United States War and Navy Departments.

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Approved 1 July 1947

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A

Paragraph			Page No.
	SECTION I	General Description	
1.		Purpose of Handbook	1-1
2.		Purpose of Equipment	1-1
3.		Power Requirements	1-1
4.		Description of Equipment	1-1
5.		Equipment Supplied	1-1
6.		Equipment Required But Not Supplied	1-1
7.		Tube Complement	1-1
	SECTION II	Installation and Adjustment	
1.		Unpacking and Inspection	2-1
2.		Mounting	2-1
3.		Adjustment and Pre-Operational Checks	2-1
	SECTION III	Operation	
1.		Functions of the Equipment	3-1
2.		Quick Routine Check	3-1
3.		Equipment to be Tested	3-1
4.		Operating Controls - Description and Function	3-1
5.		To Start Equipment	3-1
6.		Short Tests	3-1
7.		Flying Suit Tests	3-1
8.		Microphone Test	3-2
9.		Headset Test	3-2
	SECTION IV	Theory of Operation	
1.		General	4-0
2.		Voltage Control	4-0
3.		Ammeter	4-0
4.		Resistors	4-0
5.		Oscillator Section	4-1
6.		Amplifier Control	4-1
	SECTION V	Maintenance	
1.		Test Equipment Required	5-0
2.		Microphone and Headset Circuit	5-0
3.		Flying Suit Circuit	5-1
4.		Heater Bulb	5-1
	SECTION VI	Supplementary Data	6-1
	SECTION VII	Table of Replaceable Parts	7-2
	SECTION VIII	Drawings	8-1

LIST OF ILLUSTRATIONS

Figure No.		Page
1-1	Test Set TS-387/U	1-0
2-1	Test Set TS-387/U Mounting the Unit	2-0
2-2	Test Set TS-387/U Mounting Plate	2-1
3-1	Test Set TS-387/U Front Panel Controls	3-0
4-1	Selector Switch in Mag. Mic. Position	4-1
4-2	Selector Switch in Carbon Mic. Position	1-2
4-3	Selector Switch in Headset Test Position	4-2
4-4	Selector Switch in Suit, Boots, Gloves Position	4-3
4-5	Selector Switch in Short Position	4-4
6-1	Test Set TS-387/U Top View of Chassis	6-2
6-2	Test Set TS-387/U Bottom View of Chassis	6-3
6-3	Selector Switch	6-4
8-1	Test Set TS-387/U Schematic	8-3
8-2	Test Set TS-387/U Wiring Diagram	8-5
8-3	Test Set TS-387/U Outline and Dimensional Drawing	8-7

LIST OF TABLES

Table No.		Page
1-1	Equipment Supplied	1-1
1-2	Vacuum Tube Complement	1-2
5-1	Tube Terminal Voltages to Ground	5-1
5-2	Tube Terminal Resistance to Ground	5-2
5-3	Trouble Chart	5-3
6-1	Flying Suit, Headset, and Microphone Check Chart	6-1
7-1	Table of Replaceable Parts	7-2
7-2	Applicable Color Code and Miscellaneous Data	7-19
7-3	List of Manufacturers	7-20

UNSATISFACTORY REPORTS

For U.S. Army Air Force Personnel

In the event of malfunctioning, unsatisfactory design or unsatisfactory installation of any of the component units of this equipment, or if the material contained in this book is considered inadequate or erroneous, an Unsatisfactory Report, AAF Form No. 54 or a report in similar form shall be submitted in accordance with the provisions of Army Air Force Regulation No. 15-54, listing:

1. Station and organization.
2. Nameplate date (type number or complete nomenclature if nameplate is not attached to the equipment).
3. Date and nature of failure.
4. Airplane model and serial number.
5. Remedy used or proposed to prevent recurrence.
6. Handbook errors or inadequacies, if applicable.

For U.S. Navy Personnel

Report of failure of any part of this equipment during its guaranteed life shall be made on Form NAVAER-4112, "Report of Unsatisfactory for Defective Material" or a report in similar form and forwarded in accordance with the latest instruction of the Bureau of Aeronatics. Such reports of failure shall include:

1. Reporting activity.
2. Nameplate data.
3. Date placed in service.
4. Part which failed.
5. Nature and cause of failure.
6. Remedy used or proposed to prevent recurrence.

GUARANTEE

The Contractor guarantees that at the time of delivery thereof the articles provided for under this contract will be free from any defects in material or workmanship and will conform to the requirements of this contract. Notice of any such defect or non-conformance shall be given by the Government to the Contractor within one year of the delivery of the defective or nonconforming article, unless a different period of Guaranty is specified in the schedule. If required by the Government within a reasonable time after such notice, the Contractor shall with all possible speed correct or replace the defective or non-conforming article or part thereof. When such correction or replacement requires transportation of the article or part thereof, shipping costs, not exceeding usual charges, from the delivery point to the Contractor's plant and return, shall be borne by the Contractor; the Government shall bear all other shipping costs. This Guaranty shall then continue as to corrected or replacing articles or, if only parts of such articles are corrected or replaced, to such corrected or replacing parts, until one year after the date of redelivery, unless a different period of Guaranty is specified in the schedule. If the Government does not require correction or replacement of a defective or non-conforming article, the Contractor, if required by the contracting officer within a reasonable time after the notice of defect or non-conformance, shall repay such portion of the contract price of the article as is equitable in the circumstances.

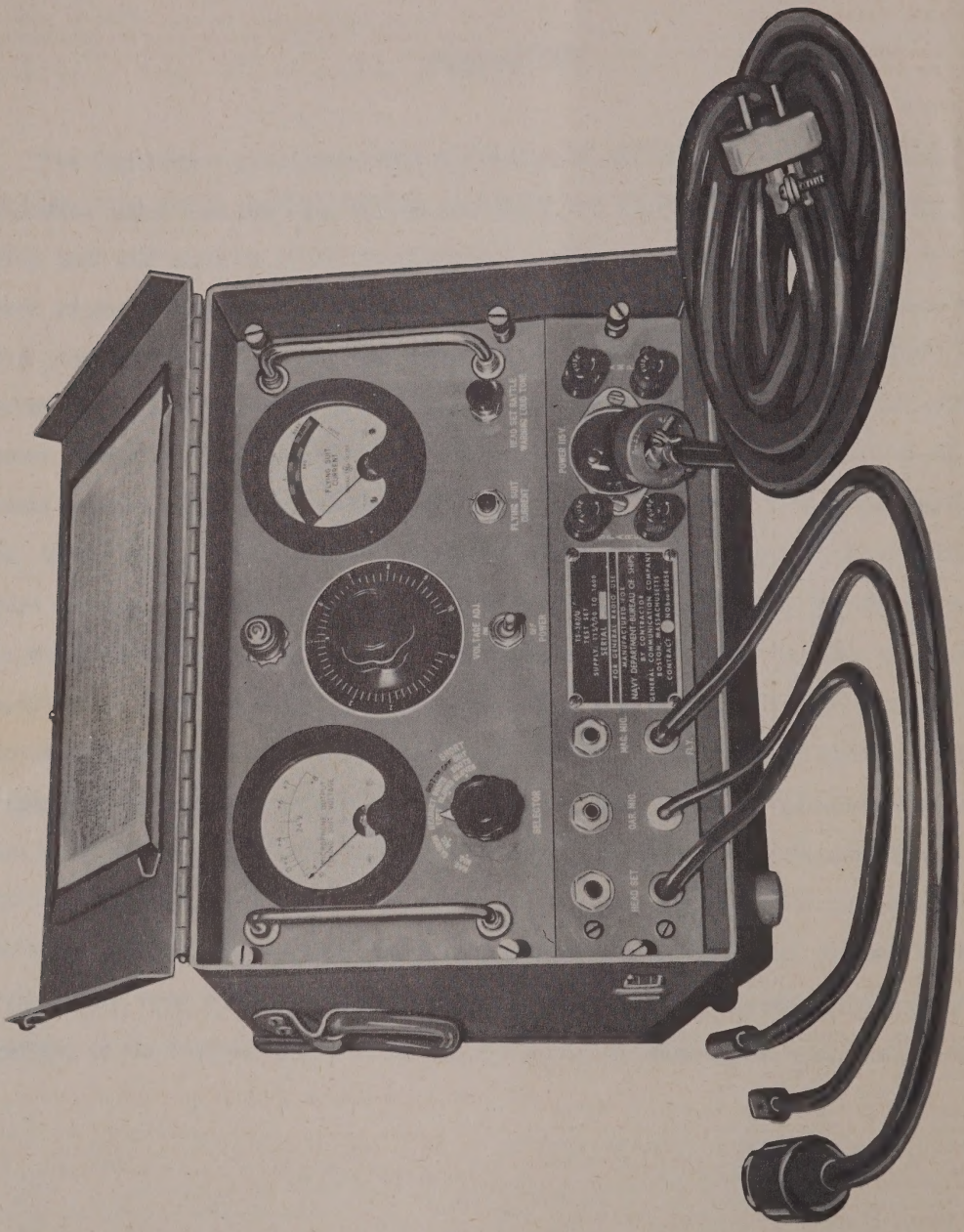


Figure 1-1 - Test Set TS-387/U

SECTION I. GENERAL DESCRIPTION

1. PURPOSE OF HANDBOOK

This handbook covers the operation and maintenance of the TS-387/U.

2. PURPOSE OF EQUIPMENT.

This tester is intended for use of airmen in regularly checking their present day flying suits, boots and gloves, headsets and microphones. This is a 'quick checking' type of device. The unit will indicate the proper resistances of a suit, boots and gloves, and may also be used as a check for shorts or open circuits. Headsets may be checked for sensitivity, rattle, and correct match between two headset units. Provision is also made for checking the sensitivity of carbon and magnetic microphones.

3. POWER REQUIREMENTS.

The power requirement for operation is 105-125 volts A-C, 50 to 1600 cycles, single phase at 0.6 ampere.

4. DESCRIPTION OF EQUIPMENT.

a. Test Set TS-387/U is a fully enclosed unit in an all-metal case equipped with carrying handles. The complete unit, including the mounting plate weighs approximately 55 pounds; without the mounting plate 52.5 pounds. The unit measures 13-5/8 inches wide x 10-1/8 inches high x 16-1/4 inches deep, for the cabinet alone. The mounting plate and bolts add a total of 1-3/4 inches to the depth. The space required for installation is shown in figure 8-3, Outline and Dimensional drawing.

b. Figure 1-1 shows the equipment with the hinged door open and the cables and controls exposed. The hinged door is provided to protect the instruments and also to prevent salt spray injuring the test set. The door is held in position by means of clamps. When the door is to be closed, the A-C cord and other cables are coiled and placed on the shelf of the set and the door closed. Two Allen wrenches are provided for the purpose of removing the knobs from the control panel, and they are clamped to the top of C-111, see figure 6-1.

c. Test Set TS-387/U consists of the following electrical circuitory: filament and plate power supply; an Audio Oscillator operating at 1000 cycles; a three stage high gain Audio Amplifier with an output of 600 ohms to match one complete Navy Type headset; Flying Suit voltage control and supply circuit to accurately supply 24 volts A-C to a flying suit even though the line voltage may vary as much as plus or minus 10% from 115 volts, with any line supply frequency from 50 to 1600 cycles; switching and indicating devices.

Table 1-1. Equipment Supplied

Quantity Per Equipment	Name of Unit	Army-Navy Type Desig.	Overall Dimensions			Weight (pounds)	Numerical Series of Reference Symbols
			Length or Depth	Width	Height		
1	Test Set (including mtg. plate).	TS-387/U	18	13-5/8	10-1/8	55	101-199
1	AC cord		10'				W-104
1	Allen Wrench #8						H-101
1	Allen Wrench #10						H-102
2	Spare fuses	28040-3	1	1/4	cyl.		F-103 F-104

Measurements are in inches unless otherwise indicated.

5. EQUIPMENT SUPPLIED.

All the equipment supplied is illustrated in figure 1-1 and listed in table 1-1.

6. EQUIPMENT REQUIRED BUT NOT SUPPLIED.

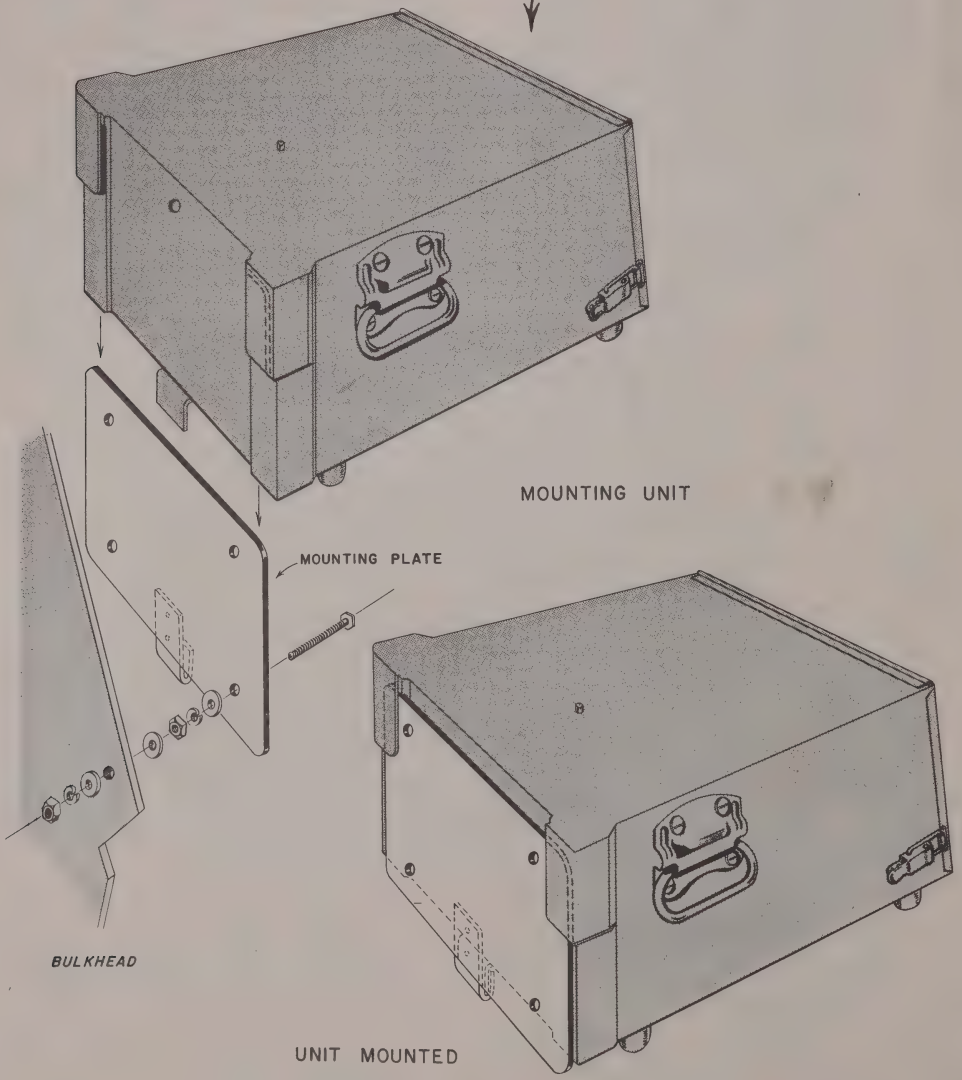
No additional equipment is required for the operation of the Test Set, except a power supply source, the requirements of which are given in paragraph 3.

7. TUBE COMPLEMENT.

Test Set TS-387/U uses a total of five tubes as shown in Table 1-2.

Table 1-2. Vacuum Tube Complement.			
Quantity	Symbol	Type	Function
1	V-101	6N7 GT	Oscillator
1	V-102	6SJ7	First Audio Amplifier
1	V-103	6SJ7	Second Audio Amplifier
1	V-104	6V6 GT	Power Amplifier
1	V-105	6X5 GT	Rectifier

Figure 2-1 Test Set TS-387/U Mounting the Unit



SECTION II. INSTALLATION AND ADJUSTMENT

1. UNPACKING AND INSPECTION

Test Set TS-387/U is packed complete with all tubes and accessories as listed in table 1-1 of paragraph 5 and table 1-2 of paragraph 7 Section 1. All tubes are in their proper sockets, and if a visual check shows no sign of shipping damage the equipment should be ready to place in operation.

2. MOUNTING.

The equipment is normally to be operated while hung on a bulkhead by means of the mounting plate. See figure 2-1 for illustration of equipment so placed, and figure 8-3 for location and sizes of holes for attaching the plate to the bulkhead. The method of mounting is covered in figure 8-3, Outline and Dimensional Drawing. All mounting hardware is attached to the mounting plate. It is only necessary to drill the bulkhead to fit the bolts on the mounting plate. For this the mounting plate may be used as a template.

3. ADJUSTMENT AND PRE-OPERATIONAL CHECKS

a. Before placing the Test Set in operation make sure that all tubes are firmly seated in their sockets and that the tube clamps are securely fastened around each tube. For the operation the chassis may be conveniently removed from the cabinet by loosening the captive screws on the front panel as shown in figure 3-1. After checking the tubes turn the chassis bottom up and make sure that the Heating Bulb, I-102, as shown in figure 6-2, is securely clamped in its socket. Replace the unit into the cabinet and insert the power supply cable into a convenient 115 volt, single phase, 50-1600 cycle supply line. Refer to figure 3-1 for Front Panel Controls. As soon as the unit is connected to a power source the Heating Bulb, L-102, should light. See paragraph 3 of Section 5. This bulb is connected ahead of the power switch and is designed to remain on at all times to provide sufficent beat to keep the wiring and components in proper condition under varying weather conditions.

b. Two screwdriver adjustment potentiometers, R-101 and R-102, will be noticed on the under-side of the chassis. These are pre-set at the factory and do not have to be touched at time of installation.

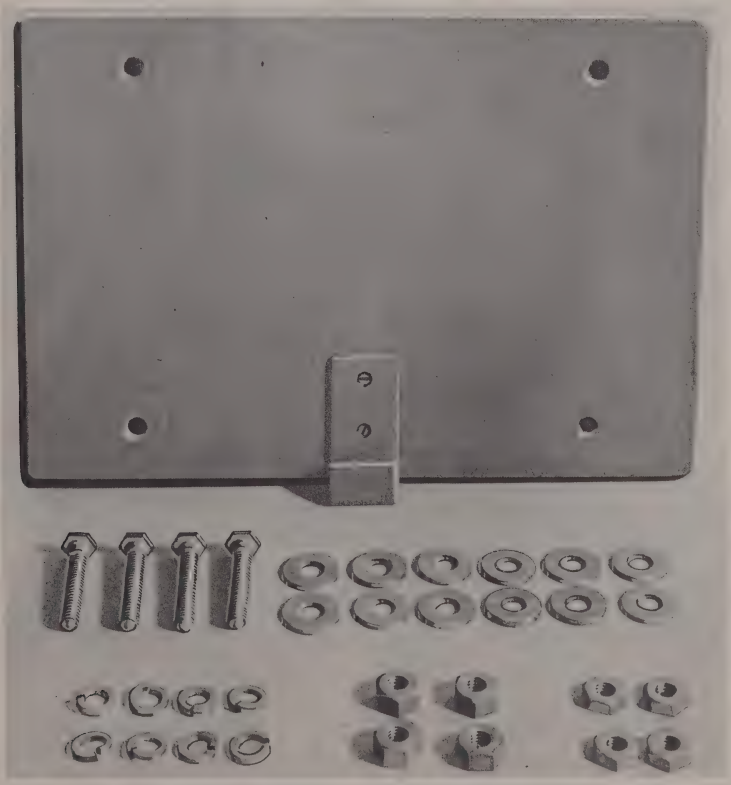


Figure 2-2 Test Set TS-387/U Mounting Plate

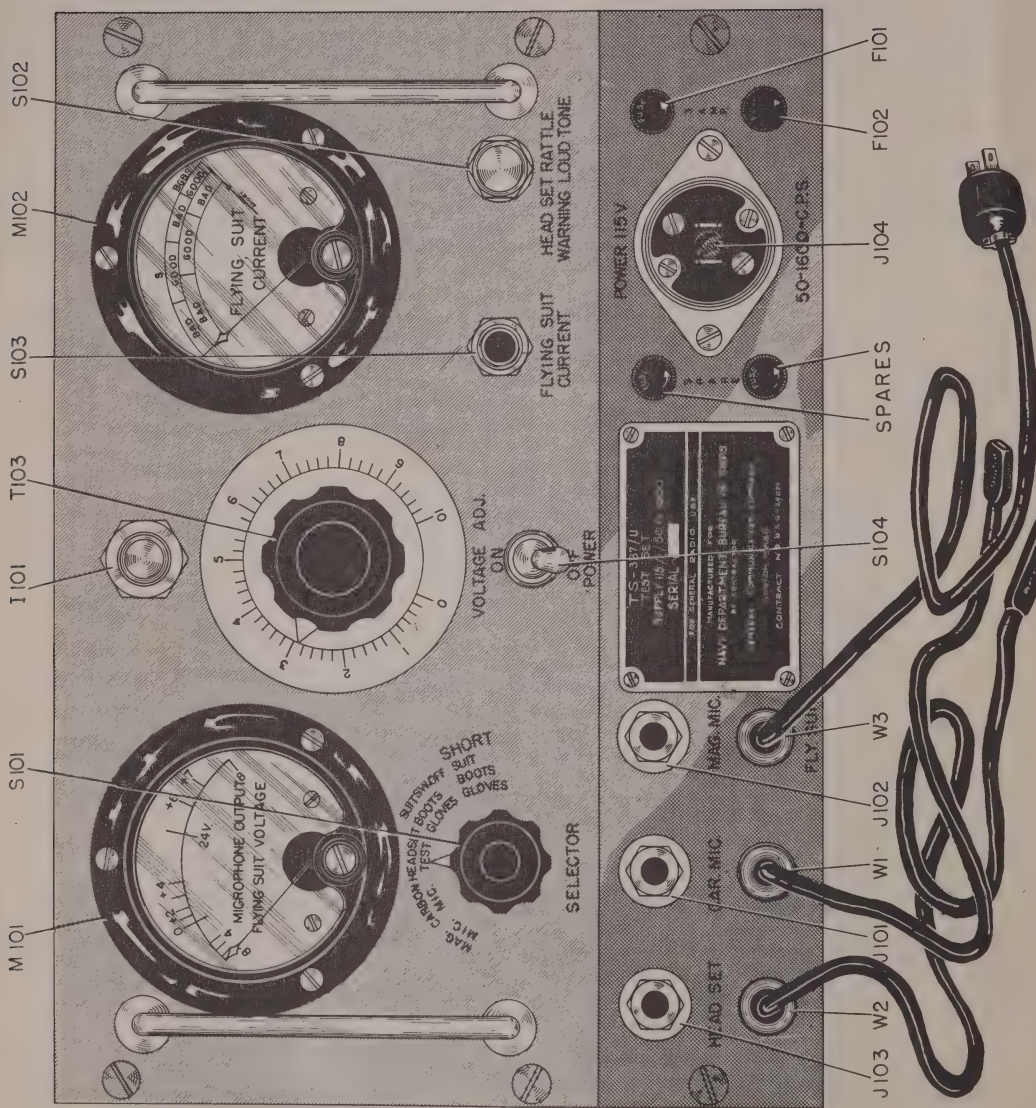


Figure 3-1 - Test Set TS-387/U Front Panel Controls

SECTION III. OPERATION

1. FUNCTIONS OF THE EQUIPMENT.

a. Test Set TS-387/U is designed to check rapidly Flying Suits, Boots and Gloves, and the Microphone and Headset equipment that is customarily used in conjunction with the suit. The unit will indicate the proper resistances of a suit, boots and gloves, and may also be used as a check for shorts or open circuits. Headsets may be checked for sensitivity, rattle, and correct match between the two headset units. Provision is also made for checking the sensitivity of carbon and magnetic microphones.

b. The unit consists of the following electrical circuitory: an audio oscillator operating at 1000 cycles; a three stage high gain audio amplifier with an output of 600 ohms to match one complete Navy Type headset; flying suit voltage control and supply circuit to accurately supply 24 volts A-C to a flying suit, even though the line voltage may vary as much as plus or minus 10% from 115 volts, and with any line supply frequency from 50 to 1600 cycles; switching and indicating devices.

2. QUICK ROUTINE CHECK.

For the usual quick routine check procedure for airmen's personal flight equipment see the instruction card in the cover of the instrument. A copy is given in section 6.

3. EQUIPMENT TO BE TESTED.

Most Navy equipment supplied for pilots other than some used on Patrol planes can be tested by this tester. This tester is to be used for routine checks by the airmen in the ready room, on the flight deck or elsewhere.

4. OPERATING CONTROLS-DESCRIPTION AND FUNCTION

a. VOLTAGE ADJUST. - This variac controls the voltage to the Flying Suit Tester. Its function is to manually compensate for changes in the supply line voltage.

b. SELECTOR SWITCH. - This is used to switch the different circuits to their proper positions to perform the functions as engraved on the front panel, see figure 3-1.

c. HEADSET RATTLE BUTTON. - This is used to switch the headset from the low to the high side of the T-Pad as a means of changing the volume on the headset.

5. TO START EQUIPMENT.

Insert the female plug on the A-C Power cable into the male receptacle on the front panel of the TS-387/U. Refer to figure 3-1 for Front Panel Controls. Connect this cable to a 115 volt, single phase, 50-1600 cycle supply line. The equipment is now ready for use.

6. SHORT TESTS.

a. Refer to figure 3-1, Front Panel Controls. With the Power switch in the OFF position plug the flying suit into the FLY SUIT jack. Connect a pair of boots and a pair of gloves to the flying suit. Turn the SELECTOR switch to the SUIT, BOOTS, GLOVES, SHORT position. Turn the switch on the flying suit cable to the HI position. Snap the POWER switch on the TS-387/U to the ON position. This will be indicated by the glow of the pilot light, I-101, on the front panel. Set the VOLTAGE ADJ. knob until the needle on the db voltmeter, M-101, is on the 24 volt mark. If a short circuit exists in the suit, boots or gloves, the ammeter, M-102, will show full scale deflection.

CAUTION

When a short circuit is indicated, the main POWER switch should be turned OFF as soon as possible.

If the meter indication is approximately half scale it may be assumed that the units are not shorted and the user should proceed directly to paragraph 5. If shorts do exist the following procedure should be followed;

b. Since the preliminary short circuit test was made with all units connected, it will now be necessary to segregate the short to a particular unit. The possible locations for shorts are; boots, gloves, suit, or the cable leading to the suit. Each unit should be tested separately as follows:

(1) Let us assume a short circuit exists with the boots, gloves, and suit (HI heat) connected. Disconnect the gloves, snap the POWER switch to the ON position and note whether or not the ammeter, M-102, reading drops to half scale. If it does it is an indication that the short circuit is in the gloves. If the short still persists, leave the gloves disconnected and disconnect the boots. Again snap the POWER switch to the ON position. If the short has disappeared it is an indication that the boots are defective. Only two possibilities are left; viz- the suit or its cable. Snap the switch on the flying suit cable to the OFF position, snap the POWER switch ON and take a reading. If the short still persists, the cable leading to the suit is defective. All defective units must be replaced before proceeding with the maintest.

c. After locating the short and replacing the defective unit, the SHORT check should again be made since it is possible to have two units of the outfit shorted and this condition might not be apparent in the test outlined above.

CAUTION

When making a short check the main POWER switch should be OFF at all times except when actually taking a reading as indicated above.

7. FLYING SUIT TEST.

a. Suit, boot, and gloves should be connected and the suit switch should be in the HI heat position. The SELECTOR switch on the TS-387/U should be in the SUIT, BOOTS, GLOVES, SHORT position. Snap the POWER switch to the ON position and adjust the voltage carefully to 24 bolts as indicated on the db voltmeter, M-101. Press the FLYING SUIT CURRENT button, indicated in figure 3-1. If the entire outfit is in good condition the needle on the ammeter, M-102, will be in the GREEN portion of the scale marked BG&S. For a preliminary check this test is satisfac-

tory but not necessarily conclusive since it would be entirely possible to have a low resistance suit cancel out the effect of a high resistance set of boots and gloves, therefore, components should be checked separately as follows;

(1) Snap the suit switch to OFF position, turn SELECTOR switch to BG position, adjust voltage accurately to 24 volts and press the FLYING SUIT CURRENT button and take the ammeter reading. The ammeter should be in the GREEN portion of the scale marked BG.

(2) Disconnect boots and gloves, snap suit switch to the HI heat position, turn SELECTOR switch to the SUIT, BOOTS; GLOVES, SHORT position, adjust voltage accurately to 24 volts, press the FLYING SUIT CURRENT button and take the ammeter reading. The needle should be in the GREEN portion of the scale marked S.

8. MICROPHONE TEST.

a. MAGNETIC MICROPHONE. - At the time of writing this instruction book, no Magnetic Microphones are in use by the Navy, and therefore no specific figures can be given as to the output. To test a Magnetic Microphone, insert plug into the jack marked MAG. MIC. Turn the SELECTOR switch to MAG. MIC. position. Speak the syllable o-o-o-h directly into the microphone in a normal tone of voice. If the microphone is in good condition, the Microphone Output needle will deflect. As mentioned above, since no magnetic microphone is now in service, the amount of deflection will have to be determined at a later date.

b. CARBON MICROPHONE TEST. - Plug the cable marked CARBON MIC., see figure 3-1, on the TS-387/U into the receptacle on the microphone cable, or plug the microphone into the jack marked CARBON MIC. Turn the SELECTOR switch to the CARBON MIC. position. Speak the syllable o-o-o-h directly into the microphone. The db meter (Microphone Output) should indicate a value above zero level.

NOTE

When using a microphone having a press-to-talk switch, it will be necessary to press this switch as usual while testing.

(1) If a pair of headphones are worn while testing a microphone, some measure of the microphone quality may be gained since the voice will be audible in the headset.

9. HEADSET SET.

a. Place the Headset plug into the jack marked HEADSET. Turn the SELECTOR switch to HEADSET TEST position. A thousand cycle tone should be distinctly heard and should have approximately the same volume in both phones.

b. Press the HEADSET RATTLE button. In this position the tone will be quite loud. No sign of rattle should be evident in either headphone.

WARNING

The RATTLE tone is quite loud and the operator will find wearing the headset uncomfortable. The phones should be flipped forward so that the tone does not enter the ear directly.

SECTION IV. THEORY OF OPERATION

1. GENERAL.

The test of the flying suit and its components is fundamentally a check of the resistances of these units, based on the fact that the resistance may be computed if the voltage and current through the device is known. For simplicity's sake a constant voltage of 24 volts is used and the ammeter scale instead of being calibrated in amperes or ohms is divided into RED and GREEN. GOOD and BAD sectors. This is done to keep from burdening the personnel with unnecessary complications of operation and to speed their job. Under normal conditions a set, consisting of flying suit, boots and gloves, will draw approximately 8.5 amperes maximum to approximately two amperes, for boots and gloves alone, at a minimum.

2. VOLTAGE CONTROL.

The system of voltage control used in the TS-387/U provides an accurate means of setting the voltage to a given point under wide variations of load condition, and under line voltage fluctuations ranging from 103 to 127 volts. T-101, see figure 8-1 is a transformer whose secondary produces 24 volts when 115 volts is delivered to the primary. Since the load conditions vary over wide limits, it is necessary to use a voltage control that has reasonably good regulation. This is accomplished by the combination of T-102 and T-103. T-103 is a center-tapped variac, controllable with a calibrated dial on the front panel. T-102 is a step-down transformer. 115 volts is placed across the winding of the variac and of T-101. The secondary of T-102, however, is connected in series with T-101. The effective resistance of T-102 secondary is very small and therefore the voltage drop across it is also small. Under a condition of line voltage that is, for example, 103 volts, the slider on the variac is placed so that the voltage induced in the secondary of T-102 is in phase with the line voltage, therefore T-102 aids T-101 and raises the voltage across T-101 to 115 volts. Conversely, if the line voltage is high, for example 127 volts, the slider on the variac is moved to the opposite end, the phase across the secondary of T-102 is then shifted 180 degrees and some of the voltage across T-101 is "Bucked" out so that 115 volts appears across T-101.

3. AMMETER.

S-101F selects the range of the ammeter, M-102, see figure 8-1. This ammeter is a two range instrument having a low range of 0-3 amperes and a high range of 0-9 amperes. The scale of the 0-3 range is divided into a GREEN portion that extends from 1.8 amperes to 2.5 amperes. The nine ampere range is divided into two GREEN sections, the lower one going from 4.9 amperes to 6.4 amperes and the high from 7.2 amperes to 8.7 amperes.

4. RESISTORS.

a. R-120 see figure 6-1, is a ballast type tube, or resistor, having a cold resistance of approximately 2.4 ohms. Its resistance is such that if the flying suit connections are shorted, M-102 will register full-scale on the nine ampere range.

b. A fixed T-Pad, consisting of R-117, R-118 and R-119 is introduced between the output of T-105 and J-103 when the SELECTOR switch is in the HEADSET TEST position. This pad reduces the output from 110 milliwatts to -.3 milliwatt.

5. OSCILLATOR SECTION.

a. V-101 is a resistance-capacitor type of oscillator, the frequency of which is controlled by R-101 and C-101.

b. R-101 is a rheostat and is adjusted by means of a screwdriver from the top of the chassis, see figure 6-1. The oscillator, V-101, is adjusted to 1000 cycles by means of this control.

c. The required output from the oscillator is obtained by another screwdriver control, R-102, see figure 6-1. R-102 is adjusted until 110 milliwatts is obtained across a 600 ohm load from J-103 when the oscillator switch is in the HEADSET RATTLE position.

6. AMPLIFIER CONTROL

a. The amplifier portion of the circuit consists of V-102, V-103, and V-104, see figure 8-1, and has a gain of approximately 90 db. The operation of this amplifier is as follows:

b. With the switch in position 1, the MAG. MIC. position, see figure 4-1;

(1) S-101A shorts R-106 to ground, leaving R-105 as cathode resistor for V-102 and utilizing a full high gain three stage amplifier, see figure 4-1 A. An exploded view of the SELECTOR switch, S-101, is shown in figure 6-3.

(2) S-101B supplies plate voltage to V-102, see figure 4-1 B.

(3) S-101C supplies J-103 with output from T-105 through R-116, see figure 4-1 C.

(4) S-101D and S-101E switches the db voltmeter, M-101, directly across the output of transformer T-105, see figure 4-1 D.

(5) S-101F is inactive.

c. With the switch in position 2, the CARBON MIC. position, see figure 4-2;

(1) S-101A opens the short across R-106 producing a voltage across R-106 to excite the carbon microphone that is connected to J-101, see figure 4-2 A.

(2) S-101B supplies voltage to V-102, see figure 4-2 B.

(3) S-101C supplies J-103 with the output from T-105 through R-116, see figure 4-2 C.

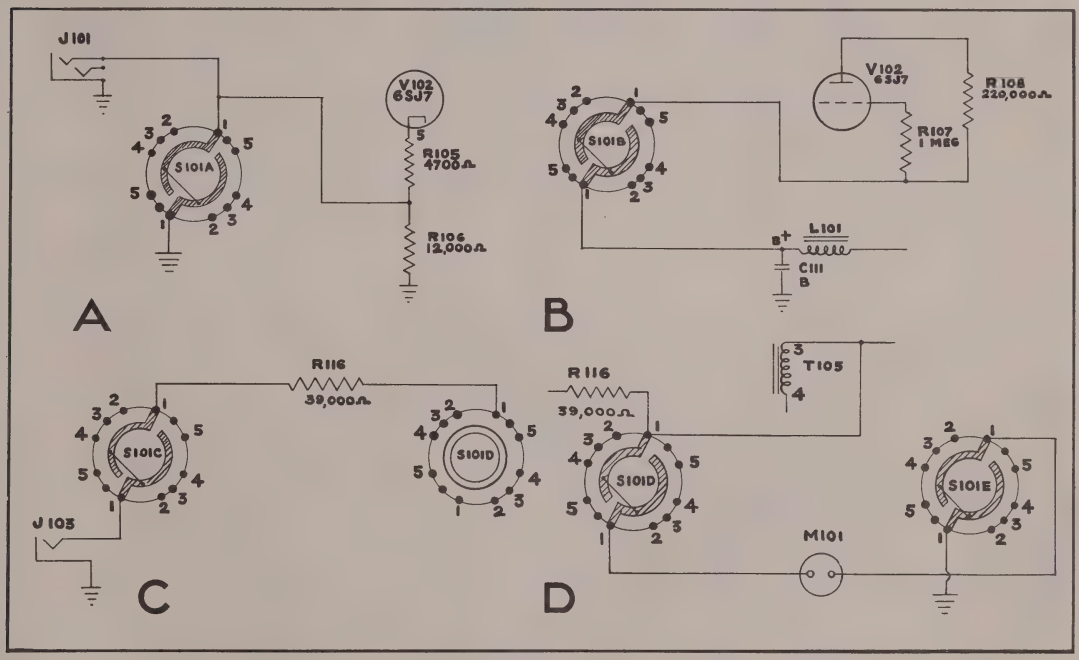


Figure 4-1 - Selector Switch in Mag. Mic. Position

d. In position 3, the HEADSET TEST position, see figure 4-3;

(1) S-101A is inactive.

(2) S-101B disconnects the plate voltage from V-102 since this stage is not needed, and connects plate voltage to V-101, the oscillator, which is coupled to the grid of V-103, see figure 4-3 A.

(4) S-101D and S-101E connect M-101 across the secondary of T-105, see figure 4-2 D.

(5) S-101F is inactive.

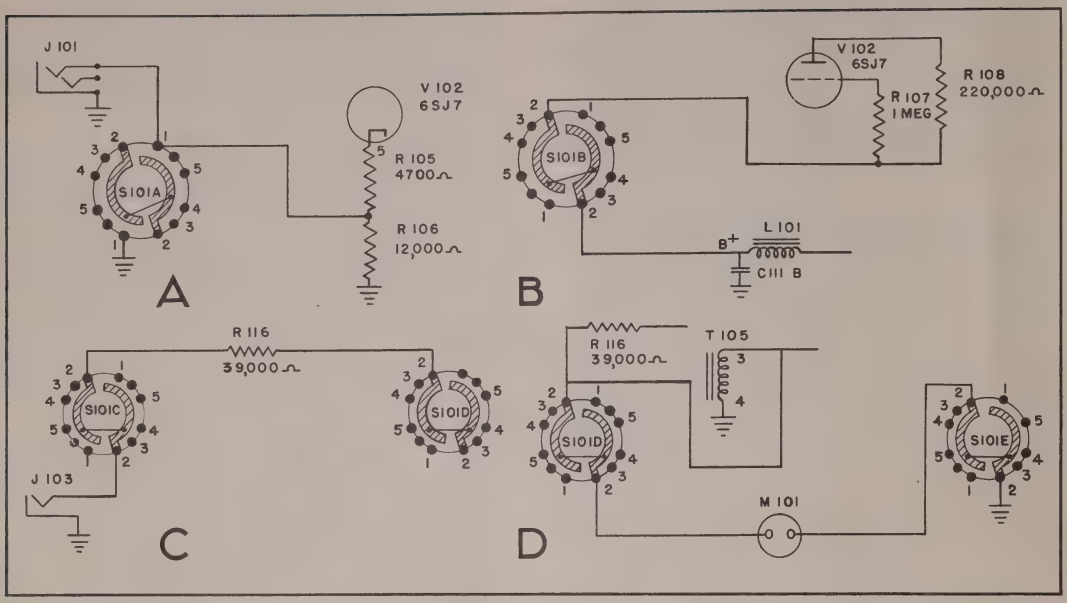


Figure 4-2 - Selector Switch in Carbon Mic. Position

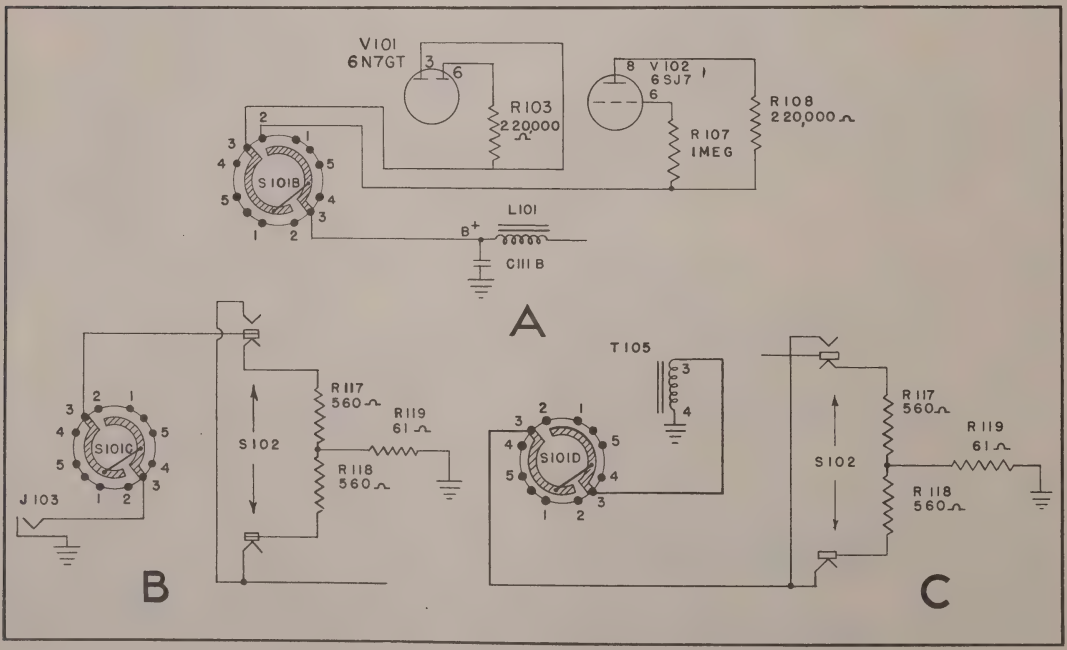


Figure 4-3 - Selector Switch in Headset Test Position

(3) S-101C connects the headset that is plugged into J-103 across the T-Pad, consisting of R-117, R-118, and R-119, the T-Pad being connected to the secondary of T-105. This T-Pad reduces the 110 milliwatt output from T-105 to 0.3 milliwatt, see figure 4-3 B.

(4) S-101D completes the circuit from T-105 to the output side of the T-Pad, see figure 4-3 C.

(5) S-101E and S-101F are inactive.

e. In position 4, the BOOTS, GLOVES position, see figure 4-4.

(1) S-101A, S-101B and S-101C are inactive.

(2) S-101D and S-101E place the voltmeter, M-101, across W-3, the flying suit cable, see figure 4-4 A.

(3) S-101F places the ammeter, M-103, to the three ampere range and in series with the flying suit supply line, see figure 4-4 B.

f. In position 5, the SUIT, BOOTS, GLOVES, SHORT position, see figure 4-5.

(1) S-101A, S-101B, S-101C are inactive.

(2) S-101D and S-101E places the voltmeter, M-101, across the flying suit line, see figure 4-5 A.

(3) S-101F places the ammeter, M-102, to the nine ampere range and in series with the flying suit supply line, see figure 4-5 B.

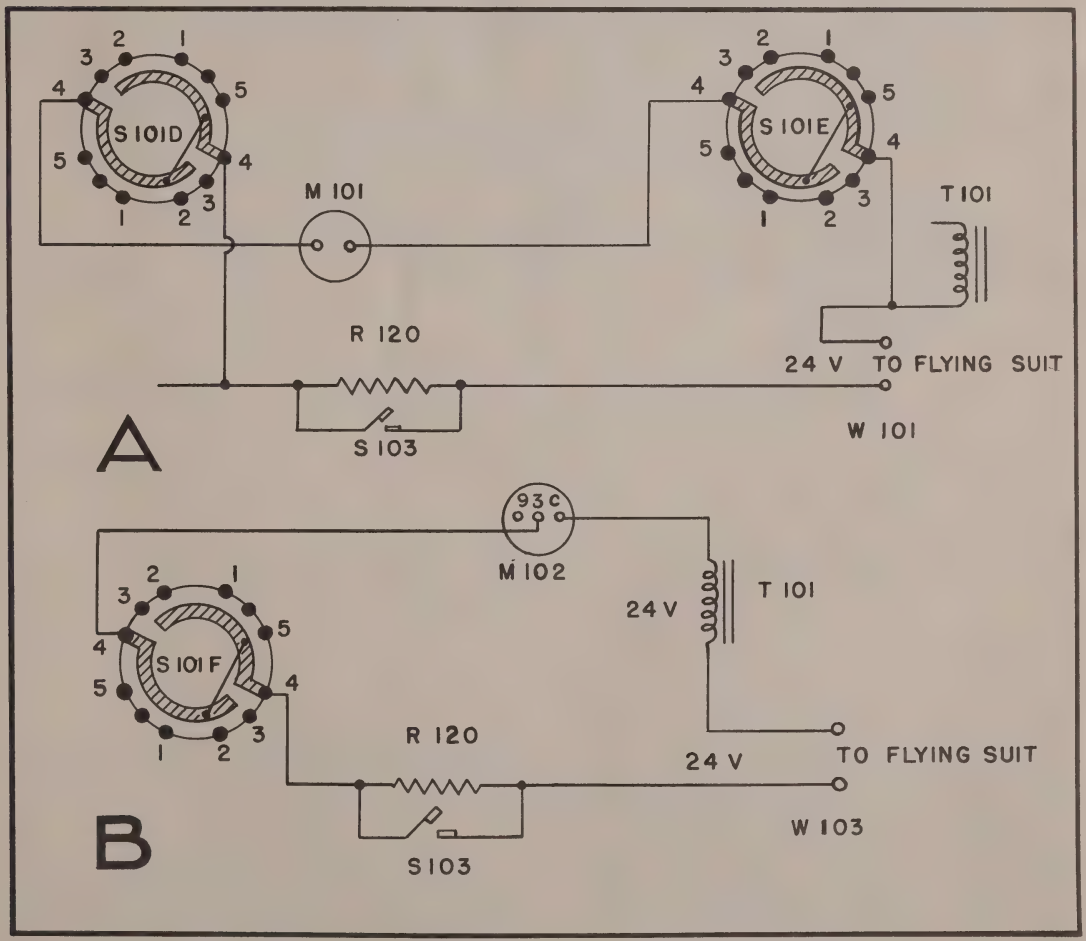


Figure 4-4 - Selector Switch in Suit, Boots, Gloves Position

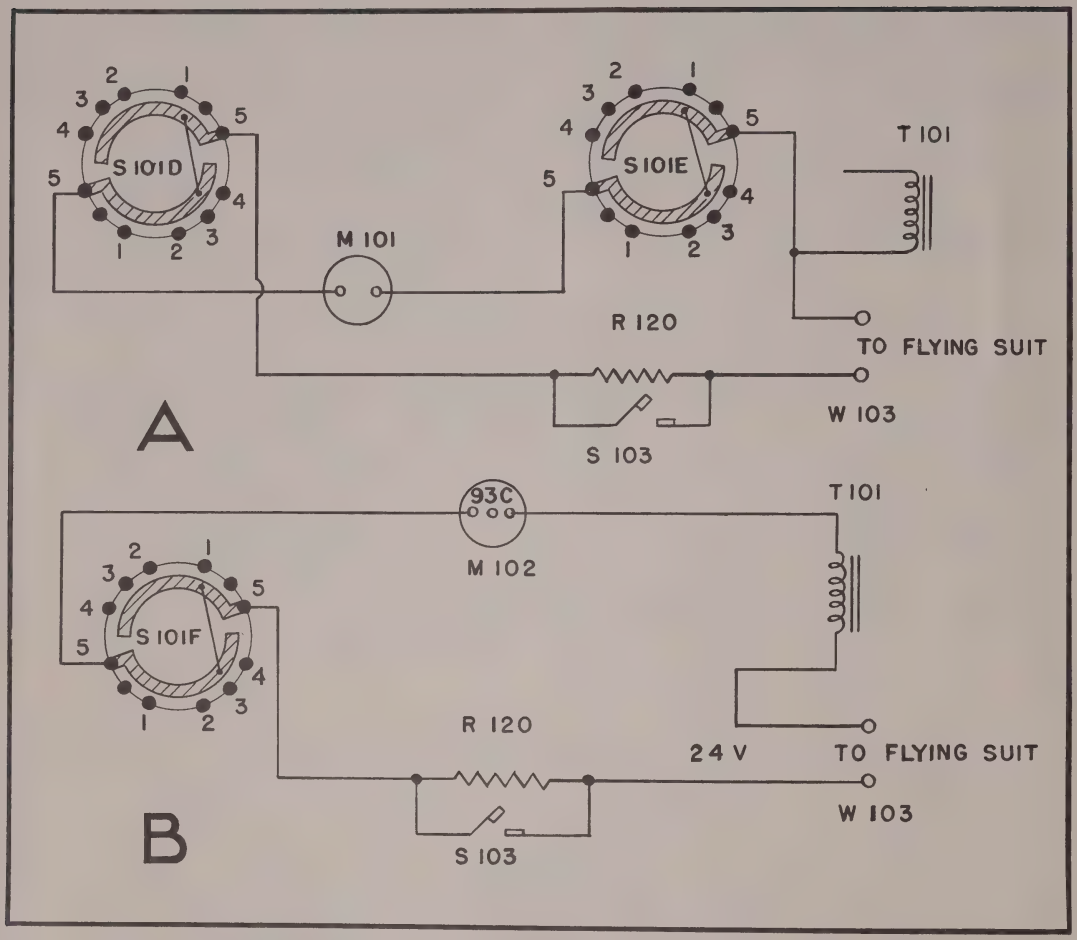


Figure 4-5 - Selector Switch in Short Position

SECTION V. MAINTENANCE

1. TEST EQUIPMENT REQUIRED.

a. VT voltmeter TS-375/U. (Alternates - Navy Model OBQ, Radio City Products 662 or RCA 165 Volt-ohmyst).

b. 1000 ohm-per-volt multimeter TS-297/U. (Alternates - Navy Model OCR, Weston 663 or Simpson 443).

c. 20,000 ohms-per-volts multimeter, TS-352/U. (Alternates - Navy Model OE, Weston 790, or Simpson 260).

d. 1000 cycles tone source for calibration of the oscillator TS-382/A audio signal generator. (Alternates - Hewlett-Packard 200-C or 205-AG, Navy Model LAJ series and Navy Model LO series.)

2. MICROPHONE AND HEADSET CIRCUIT.

a. FUSES AND TUBES. - In case of failure of these circuits, the fuses should first be checked. If this is not the trouble the tubes should be tested for emission and shorts.

b. VOLTAGES AND RESISTANCES. - If the tubes and fuses are in good condition, the next step is to carefully check the voltages and resistances at the socket terminals. For these measurements see Table 5-1, Tube Terminal Voltages to Ground, and Table 5-2, Tube Terminal Resistances to Ground.

c. FREQUENCY. - Once the unit has been repaired it may be necessary to adjust the oscillator frequency and power output. The frequency is adjusted by means of the screwdriver adjustment, R-101, from the top of the chassis see figure 6-1. This should be

set against a standard 1000 cycle source. The accuracy, however, need be no closer than plus or minus 20 per cent of 1000 cycles.

d. POWER OUTPUT. - Once the frequency has been adjusted, the power output should be checked. Connect a 600 ohm resistor across the headset jack. Place a vacuum tube voltmeter TS-375/U across this resistor. With the SELECTOR switch set to the HEADSET TEST position and the HEADSET RATTLE button pressed, adjust the screwdriver control, R102, from the top of the chassis (see figure 6-1) until the voltmeter reads 8.12 volts. This feeds 110 milliwatts into the headset in the HEADSET RATTLE test.

3. FLYING SUIT CIRCUIT.

a. SERIES RESISTANCE TUBE. - The series resistance tube, R-120, may burn out. This will be evident by no current indication on the ammeter except when the FLYING SUIT CURRENT button, S-103, is pressed. If this occurs, the resistance tube should be replaced.

b. TRANSFORMERS AND VARIAC. - When it becomes necessary to replace transformer T-102 or the variac in this circuit, care should be taken that the new units are wired exactly as the original components. The polarity is important even though this is an A-C circuit. If the wires should be reversed the voltmeter will increase as the variac is turned counter-clockwise. The meter should increase as the variac is turned clockwise.

4. HEATER BULB.

The heater bulb in the rear of the chassis, see figure 6-2, normally runs all the time that the equipment is plugged in, even though the main power switch is turned off. The purpose of this bulb is to keep the wiring dry and to prevent the growth of fungus under conditions of high humidity such as occur in the tropics. The equipment will still operate satisfactorily even though bulb has burned out. Some operators may not consider the bulb necessary when the set is used under normal climatic conditions. It is recommended, however, that a burned out bulb be replaced as soon as possible since the equipment may be moved to a moist climate at any moment. It is possible to check the bulb by looking through any of the three jacks, as the glow of the bulb is clearly visible at these points.

Table 5-1. TUBE TERMINAL VOLTAGES TO GROUND

		Readings taken with 1000 ohms-per-volt meter				Readings taken with 20,000 ohms-per-volt meter			
Symbol	Pin #	Mag. Mic.	Car. Mic.	Headset Test	Suit and/or Boots & Gloves	Mag. Mic.	Car. Mic.	Headset Test	Suit and/or Boots & Gloves
V-101	1	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0
	3	0	0	+246	0	0	0	+235	0
	4	0	0	0	0	-0.45	-0.45	0	-0.45
	5	0	0	0	0	0	0	0	0
	6	0	0	0	0	-0.7	-0.7	+ 95	-0.7
	*7	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
	8	0	0	0	0	0	0	0	0
V-102	1	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0
	3	+ 1.5	+ 1.5	0	0	+ 3.6	+ 3.6	0	0
	4	0	0	0	0	0	0	0	0
	5	+ 1.5	+ 1.5	0	0	+ 3.6	+ 3.6	0	0
	6	+37	+138	0	0	+ 75	+138	0	0
	*7	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
	8	+68	+172	0	0	+115	+172	0	0
V-103	1	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0
	3	+ 1.5	+ 1.5	+ 1.5	+ 1.5	+ 2.6	+ 2.6	+ 2.55	+ 2.6
	4	0	0	0	0	0	0	0	0
	5	+ 1.5	+ 1.5	+ 1.4	+ 1.5	+ 2.6	+ 2.6	+ 2.55	+ 2.6
	6	+35	+ 35	+ 35	+35	+ 65	+ 65	+ 65	+65
	*7	+50	+ 50	+ 48	+50	+ 85	+ 85	+ 80	+85
V-104	1	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0
	3	+245	+245	+235	+245	+245	+245	+235	+235
	4	+249	+249	+240	+249	+249	+249	+240	+249
	5	0	0	0	0	0	0	0	0
	6	NC	NC	NC	NC	NC	NC	NC	NC
	*7	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
	8	+ 14	+ 14	+ 13.5	+ 14	+ 14	+ 14	+ 13.5	+ 14
V-105	1	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0
	*3	+228	+228	+228	+228	+228	+228	+228	+228
	4	NC	NC	NC	NC	NC	NC	NC	NC
*A-C	*5	+229	+229	+229	+229	+229	+229	+229	+229
	6	NC	NC	NC	NC	NC	NC	NC	NC
	7	0	0	0	0	0	0	0	0
	8	+265	+265	+260	+265	+265	+265	+260	+265

TABLE 5-2 TUBE TERMINAL RESISTANCES TO GROUND

Readings taken with RCA Voltohymst - all measurements to chassis.

SYMBOL	PIN #	MAG MIC	CAR MIC	HEADSET TEST	BOOTS + SUIT, BOOTS GLOVES GLOVES
V-101	1	0	0	0	0
	2	0	0	0	0
	3	INF	INF	INF	INF
	4	13.7 K	13.7 K	13.7 K	13.7 K*
	5	0	0	0	0
	6	INF	INF	14 Meg	INF
	7	.15	.15	.15	.15
	8	310	310	310	310
V-102	1	0	0	0	0
	2	0	0	0	0
	3	4.8 K	18 K	4.8 K	18 K
	4	240 K	240 K	240 K	240 K
	5	4.8 K	18 K	4.8 K	18 K
	6	30 Meg	30 Meg	INF	INF
	7	.15	.15	.15	.15
	8	30 Meg	30 Meg	INF	INF
V-103	1	0	0	0	0
	2	0	0	0	0
	3	3.3 K	3.3 K	3.3 K	3.3 K
	4	470 K	470 K	470 K	470 K
	5	3.3 K	3.3 K	3.3 K	3.3 K
	6	INF	INF	INF	INF
	7	.15	.15	.15	.15
	8	INF	INF	INF	INF
V-104	1	0	0	0	0
	2	0	0	0	0
	3	INF	INF	INF	INF
	4	INF	INF	INF	INF
	5	.5 Meg	.5 Meg	.5 Meg	.5 Meg
	6	NC	NC	NC	NC
	7	.15	.15	.15	.15
	8	390	390	390	390
V-105	1	0	0	0	0
	2	INF	INF	INF	INF
	3	82	82	82	82
	4	NC	NC	NC	NC
	5	89	89	89	89
	6	NC	NC	NC	NC
	7	INF	INF	INF	INF
	8	INF	INF	INF	INF

* Depends on set of R-101.

Table 5-3. TROUBLE CHART	
SYMPTOMS	INDICATED SOURCE OF TROUBLE
Failure in Microphone and Headset circuit.	1. Fuses 2. Check tubes for emission and shorts.
Voltage and Resistance failure.	If tubes and fuses are good, check voltages and resistance at socket terminals, (see Tables 5-1 & 5-2).
Oscillator incorrect frequency.	Defective V-101 R-101 out of adjustment. C-101, C-102, C-103 defective. R-101, R-102, R-103 defective.
Failure of Headset Rattle Test, if 1000 cyc. tone is present but does not change volume when the HEADSET Rattle button is pressed.	Defective S-102 Defective R-117, R-118, R-119
Flying Suit Circuit: - no current indication on ammeter except when S-103 is pressed.	Defective resistance tube R-120.
No Flying Suit voltage or current indications.	Defective T-101 or T-102
No control of Flying Suit Voltage	Defective T-101 or T-103

SECTION VI SUPPLEMENTARY DATA

Table 6-1. FLYING SUIT, HEADSET AND MICROPHONE CHECK CHART. TS-387/U

1. FLYING SUIT BOOTS AND GLOVES - Equipment not connected to tester. Flying suit switch (on suit cable) to HI. Snap boots and gloves onto suit. Tester POWER switch ON. SELECTOR switch on SHORT.

(a) Flip POWER off. Quickly connect suit to tester, then flip POWER switch ON noting if FLYING SUIT CURRENT reads full scale. (If so, instantly flip POWER off again, replace units and repeat test. Short circuit may be isolated later per instruction book). If not, proceed:
(b) Push FLYING SUIT CURRENT button and set FLYING SUIT VOLTAGE to 24v by VOLTAGE ADJ. knob. FLYING SUIT CURRENT meter should indicate GOOD on BG&S scale. Release button. Continue as follows:

2. BOOTS AND GLOVES ALONE - Next, set suit switch to OFF; then SELECTOR to BOOTS AND GLOVES. Press FLYING SUIT CURRENT button and set FLYING SUIT VOLTAGE to 24v. FLYING SUIT CURRENT meter should read GOOD on bottom scale. Release button. If tests 1 and 2 indicate GOOD the suit boots and gloves are OK. (If suit alone is to be checked, see instruction book.)

3. HEADSET - SELECTOR to HEADSET TEST.
(a) Connect headset to HEAD SET jack. A pure tone should be heard. If not, replace headset and/or cord.
(b) WARNING! Remove phones from ears for following test: Push HEADSET RATTLE button. Tone should be very loud but clear. If raspy replace headphone.

4. MICROPHONE (CARBON) - Connect microphone to CAR. MIC. jack or cable. Set SELECTOR on CARBON MIC. Headset on ears. Speak the syllable o-o-o-h directly into the microphone. While pressing the push to talk switch (if any) the MICROPHONE OUTPUT meter should indicate greater than O level, also the voice should be heard in the headset. Disconnect equipment from tester and return SELECTOR to SHORT position.

Last user please turn POWER switch OFF.

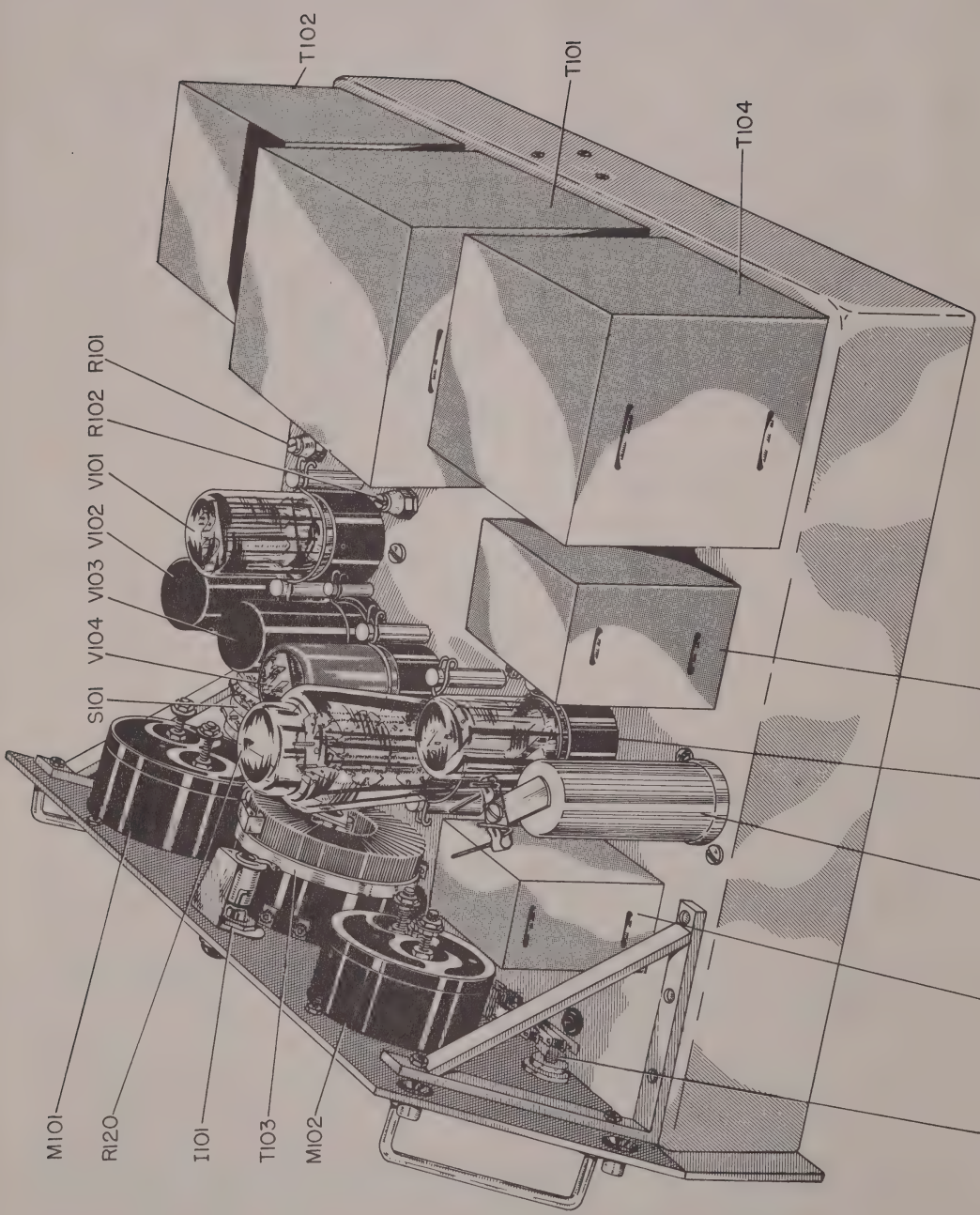


Figure 6-1 - Test Set TS-387/U Top View of Chassis

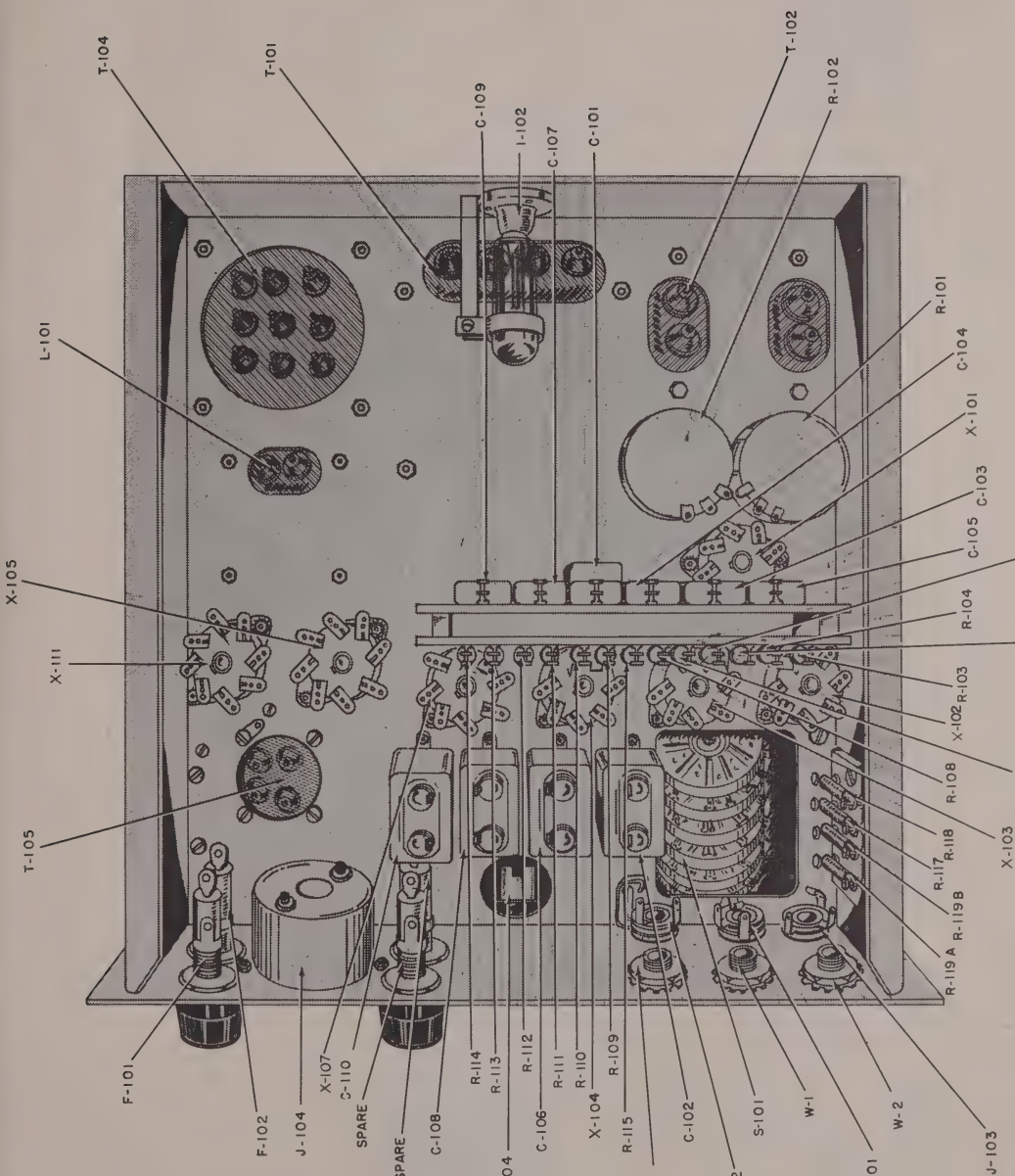


Figure 6-2 - Test Set TS-387/U Bottom View of Chassis

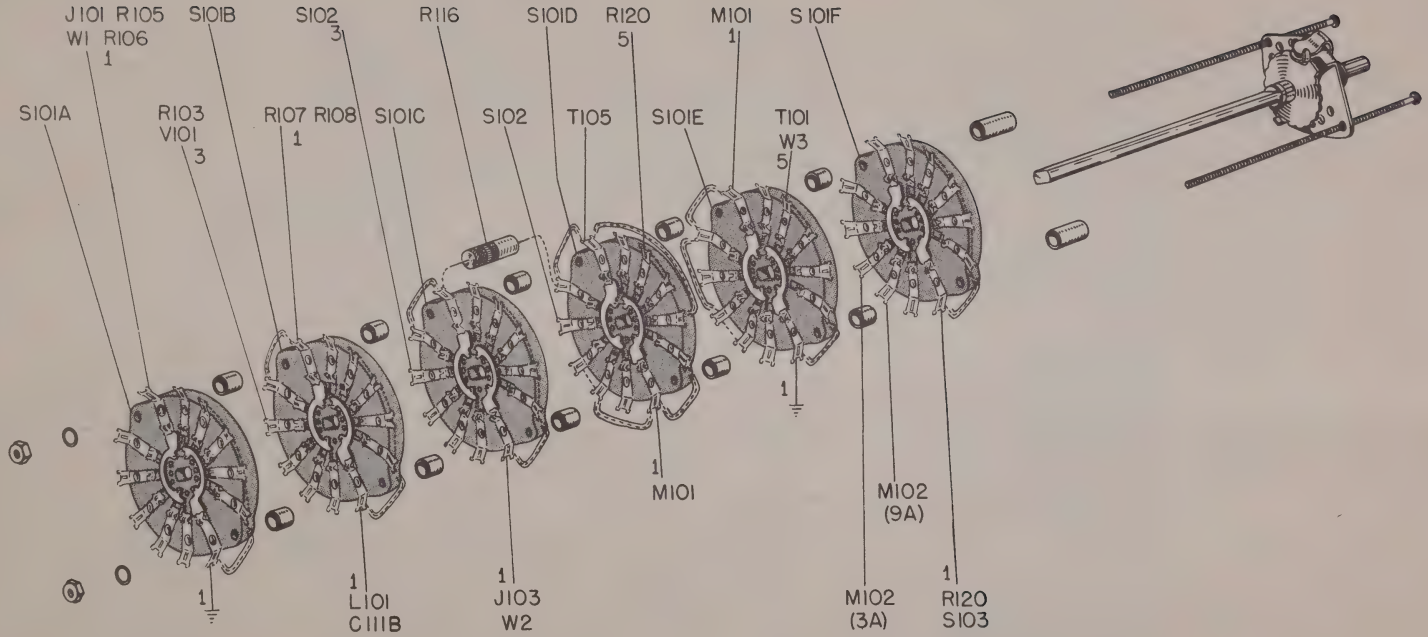


Figure 6-3 - Selector Switch

SECTION VII TABLE OF REPLACEABLE PARTS

INTRODUCTION

This section contains the following:

Table 7-1 Table of Replaceable Parts

Table 7-2 Applicable Color Codes and Miscellaneous Data

Table 7-3 List of Manufacturers

TABLE 7-1 TABLE OF REPLACEABLE PARTS

MAJOR ASSEMBLY — TEST SET TS — 387 / U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
101-199 Series		TEST SET TS-387/U Includes one complete set of tubes; audio oscillator; amplifier and output meter; power supply in conjunction with voltmeter and ammeter; cables, switches and other tuning controls on the front panel; all contained in a cabinet with hinged cover; outside dimensions approximately 13-5/8" x 10-1/8" x 18".			
C-101		CAPACITOR: Fixed; duel silvered mica; .017 mfd ±5%; 500 volts DCW; O.A. 53/64" x 53/64" x 9/32" thick; .040 axial leads 1-1/4" long.	R.C. Osc V-101 Grid	6 1464	032
C-102	R16-C-10635-15	CAPACITOR: Fixed; paper; oil impregnated; .1 mfd ±10%; 600 volts DCW; metal case 1-13/16" long, 1" wide, 3/4" high; 3/16" mtg. holes 2-1/8" centers; soldering lug terminals (top).	V-101 Cathode By-pass	6 630MT CP51BIE-F104K	034 JAN C-25
C-103	R16-C-10240-75	CAPACITOR: Fixed; silvered mica; .002 mfd ±5%; 500 volts DCW; O.A. 53/64" x 53/64" x 9/32" thick; .040 axial leads 1-1/4" long.	V-101 Plate to Grid Feedback	6 1464	0321

TABLE 7-1 TABLE OF REPLACEABLE PARTS

MAJOR ASSEMBLY — TEST SET TS — 387/U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
C-104	R16-C-9976-25	CAPACITOR: Fixed; mica; .00025 mfd ±10%; 500 volts DCW; O.A. 53/64" x 53/64" x 9/32" thick; .040 axial leads.	Audio Osc. coupling V-101 cathode V-103 grid	6 1467	0322 JAN-C-5
C-105	R16-C-10083-115	CAPACITOR: Fixed; mica; .001 mfd ± 10%; 500 volts DCW; O.A. 53/64" x 53/64" x 9/32" thick; .040 axial leads 1-1/4" long.	Mag. Mic. coupling grid V-102	6 1467 CM30A-102K	0320 JAN-C-5
C-106	R16-C-10635-15	Same as C-102	V-102 screen by-pass.		
C-107	R16-C-10083-115	Same as C-105	Coupling V-102 plate V-103 grid.		
C-108	R16-C-10635-15	Same as C-102	V-103 screen by-pass		
C-109	R16-C-10083-115	Same as C-105	Coupling V-103 plate V-104 grid.		
C-110	R16-C-1135-25-500	CAPACITOR: Fixed; paper; oil impregnated; .5 mfd ±10%; 600 volts DCW; metal case 1-3/16" long, 1" wide, 3/4" high; 3/16" mtg. holes 2-1/8" centers; soldering lug terminals (top).	Cathode by-pass V-104	6 630MT C51B1EF-504K	0324 JAN-C-25

TABLE 7-1 TABLE OF REPLACEABLE PARTS

MAJOR ASSEMBLY — TEST SET TS — 387/U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
C-111		CAPACITOR: Dry electrolytic; 20-20 mfd, 450 volt; etched foil; metal can 1-3/8" dia. 2-1/2" high; plugs into .687 dia. pin, circle octal socket.	Filter plate supply	6 AEP CE52A-200R	0325 JAN-C-62
E-101	R16-GCC-P191-A30	BOARD: Terminal; XXX Bakelite; 6" long, 1-7/16" wide, 1/8" thick; 26 Cambridge Thermionic Co. 1724E turret lugs riveted on.	Resistor board	1 P191-A30	0530
E-102	R16-C-GCC-P191-A31	BOARD: Terminal; XXX Bakelite; 6" long, 1-7/16" wide, 1/8" thick; 12 Cambridge Thermionic Co. 1724E turret lugs riveted on.	Condenser Board	1 P191-A31	0529
E-103	R16-GCC-P191-A-32	BOARD: Terminal; XXX Bakelite; 2-1/8" long, 1-5/8" wide, 1/8" thick; 8 Cambridge Thermionic Co. 1724D turret lugs riveted on.	Terminal Board	1 P191-A32	0528
E-104		CLIP: Fahnestock; spring brass nickel plated; single clip 3/4" long, 5/16" wide, 7/16" high.	Hold Allen wrench	60 41	051
E-105		Same as E-104	Hold Allen wrench		

TABLE 7-1 TABLE OF REPLACEABLE PARTS

MAJOR ASSEMBLY — TEST SET TS — 387 / U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
E-106	R16-K-4081	KNOB: Fluted Bakelite; 1-1/8" dia. 5/8" thick; brass insert for 1/4" shaft; two 8-32 Allen head set screws; plastic pointer extends 7/8" from C.L. of shaft hole.	Switch knob	100 637-A	059
E-107	R16-K-3460	KNOB: Fluted bakelite; 1-5/8" dia. with 2" skirt 7/8" thick; brass insert for 3/8" shaft; two 8-32 Allen head set screws.	Variac knob	100 637K	0531
E-108		GROMMET: Rubber; 9/16" O.D.; 1/4" I.D.; 1/4" thick for 3/8" hole in 1/16" panel.	Grommet	205 334-3	0532
F-101	R17-F-14278-10	FUSE: 3 amp.; glass encased; 1" long, 1/4" diameter.	Line fuse	15 8AG	061
F-102		Same as F-101	Line fuse		
F-103		Same as F-101	Spare fuse.		
F-104		Same as F-101	Spare fuse.		
H-101		WRENCH: Allen; for #8 socket head screw; "L" shaped; 5/64" steel cadmium plated hex. rod 1-7/8" long; short leg 11/16" long.	Wrench	75 #8	081

TABLE 7-1 TABLE OF REPLACEABLE PARTS

MAJOR ASSEMBLY — TEST SET TS — 387 / U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
H-102		WRENCH: Allen; for #10 socket head screw; "L" shaped; 3/32" steel cadmium plated hex rod 2-1/8" long; short leg 3/4" long.	Wrench	75 #10	082
H-103	R16-GCC-P191-A16	SCREW: Captive; stainless steel; head 3/8" dia. 3/8" slotted and knurled; shank .125" dia. 5/8" long, 10-24 thread at end; O.A. length 1-3/8".	Hold panel	1 P191-A16	0812
H-104		CLAMP: Condenser; post 3/8" brass rod cadmium plated, 2-1/2" long, tapped ea. end 8-32, 1/2" deep; clamp 3/8" wide, 1-1/2" long, .062 thick; .1695 mtg.hole.	Hold C-111	1 P191-A20 P191-A21	0813
H-105		CLAMP: Tube; consists of 2 brass N.P. posts 1/4" diam., 1-1/16" long, tapped 6-32 x 3/8" deep at bottom; 1 post with 1/8" slot 1/16" deep 7/8" from bottom, other post with 1/8" hole 7/8" from bottom; clamp .051 phosphor bronze wire 1-1/8" diam.; mtg. centers between posts 1-1/2".	Hold V-101 6N7	1 P191-B68	083
H-106		Same as H-105	Hold V-104 6V6		
H-107		Same as H-105	Hold V-105 6x5		

TABLE 7-1 TABLE OF REPLACEABLE PARTS

MAJOR ASSEMBLY — TEST SET TS — 387 / U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
H-108		CLAMP: Tube; consisting of 2 brass N.P. posts 1/4" diam., 5/8" long; tapped 6-32 x 3/8" deep at bottom; 1 post with 1/8" slot 1/16" deep 7/16" from bottom; other post with 1/8" hole 7/16" from bottom; clamp .051 phosphor bronze wire 1" diam.; mtg. centers between posts 1-5/8".	Hold V-102 6SJ7	1 P191-B68	084
H-109		Same as H-108	Hold V-103 6SJ7		
H-110		CLAMP: Tube; consisting of 2 brass N.P. posts 1/4" diam. 1-3/8" long; tapped 6-32 x 3/8" deep at bottom; 1 post with 1/8" slot 1/16" deep, 1-1/8" from bottom; other post with 1/8" hole 1-1/8" from bottom; clamp .051 phosphor bronze wire 1-5/16" diam; mtg. centers between posts 1-11/16".	Hold Ballast tube R-120	1 P191-B68	085
H-111	R16-GCC-P191-A35	BOLT: Plate mounting; 3/8-16 x 2-1/2" O.A.; hex head .687", .109" thick.	For mounting back plate to bulk-head	1 P191-A35	0814

TABLE 7-1 TABLE OF REPLACEABLE PARTS

MAJOR ASSEMBLY — TEST SET TS — 387/U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
H-112		CLAMP: Heater Lamp; consists of brass cadmium plated post 5/16" x 5/16" x 2-1/2" long; tapped 6-32 at bottom; tapped 6-32 on one side 1/4" from top; clamp 7/16" x .032 brass cadmium plated, lined with 1/16" asbestos, bent 7/8" diam. with 5/8" legs, drilled and mounted to post with 5/16" x 6-32 binding head screw.	Hold I-102	1 0815 P191-A32 P191-A23	0815
I-101		LAMP: Pilot; .25 amp., 6-8 volt, bayonet base.	Pilot lamp	88 44	091
I-102		LAMP: Heat control; 15 watt, 120 volt, candelabra base.	Heater lamp	88 15TC	092
J-101	R16-J-950	JACK: Microphone; 2 circuit open contact.	Carbon mic.	180 TC61	1010
J-102	R16-J-3350	JACK: Microphone; single circuit closed contact.	Mag. mic.	180 TC63	1011
J-103	R16-J-1671	JACK: Microphone; single circuit open contact.	Head-set	180 TC60	1012
J-104	R17-R-2242	RECEPTACLE: Motor Plug; male; parallel blades; 15 amps. 125 volts; cord hole .406"; O.A. dimensions 2.55" long, 1.593" wide, 1.281" high; mtg. holes .203" diam., 2.063" centers.	A-C Power receptacle	18 4897	1017

TABLE 7-1 TABLE OF REPLACEABLE PARTS

MAJOR ASSEMBLY — TEST SET T S — 387 / U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
J-105		HOLDER: Fuse; molded phenolic; black; spring contact at base; screw cap with hole for test prod at top; 2-1/2" long, 11/16" diam., 1/2" of 24 thread for mounting.	Hold fuse	15 HJMH	1015
J-106		Same as J-105	Hold fuse		
J-107		Same as J-105	Hold Spare fuse		
J-108		Same as J-105	Hold spare fuse		
J-109	R17-L-12932-275	ASSEMBLY: Pilot Light; includes red jewel, cap, reducer bushing and locknut, light socket and bracket, mechanical dimmer; O.A. dimensions 2-3/8" long x 1" diam.	Hold I-101	16 431	102
J-110		JACK: Pin; 2 circuit; moulded bakelite. O.A. dimensions 1-1/4" long, 1/2" wide, 3/8" thick.	Part of W-101	180 JK48	1018
J-111	R16-J-1100	JACK: Headset; 2 circuit; moulded bakelite. O.A. dimensions 2-7/8" long, 1/2" diam.	Part of W-102	180 NAF 215284-2	1019

TABLE 7-1 TABLE OF REPLACEABLE PARTS

MAJOR ASSEMBLY — TEST SET TS — 387/U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
J-112		RECEPTACLE: Candelabra; porcelain base; 1/8" diam. mtg. holes, 1-1/8" centers; O.A. dimensions 1-5/8" diam., 7/8" high; screw type contacts.	Heater lamp receptacle	205 10028	1020
L-101		CHOKE: 15 henries, 65 ma., 420 ohm. D-C resistance, 1500 volts; 4320 turns #34 wire; can size 2-1/8" wide, 2-1/4" long, 2-1/8" high; 2 soldering lug terminals; four 8-32 mtg. studs.	Filter choke	11 13750 P191-B62	125
M-101		METER: A-C; combination db and volt; single scale, one marking at 24 volts; bakelite case with 3-1/2" diam. flush flange; dimensions behind flange 2-3/4" diam. x 1-9/16" deep; two terminals 1/4"-24 x 3/8" long.	A-C volt and db meter	88 Type A022 Model 8A022VBX206 P191-A4	135
M-102		AMMETER: Double scale marked "Good" "Bad" and "Short"; bakelite case with 3-1/2" diam. flush flange; dimensions behind flange 2-3/4" diam. x 1-9/16" deep; one terminal 1/4"-24 x 1/2" long; two terminals 1/4"-24 x 3/4" long.	A-C Ammeter	88 Type A022 Model 8A022ABB201 P191-A3	136

TABLE 7-I TABLE OF REPLACEABLE PARTS

MAJOR ASSEMBLY — TEST SET T S — 387 / U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
N-101		DIAL: Aluminum; 3" diam; .032 thick; 1/2" hole in center; three 1/8" mtg. holes .812" radius, 120° apart; 50 graduations clockwise.	Voltage adjust indicator	185 P191-A54	144
P-101	R17-P-4436-391	PLUG: Female; composition, encased in steel cap with cable grip clamp; 15 amps., 125 volts O.A. dimensions 1.655" long, 1.375" diam. Part of W-104.	A-C cable	18 7257 CHU-49800	161
P-102		PLUG: Male; composition; encased in steel cap with cable grip clamp; 15 amps., 125 volts; parallel blades; O.A. dimensions 1.218" long, 1.375" diam. Part of W-104.	A-C cable	18 7357 CHU-49799	162
P-103		PLUG: Female; composition; twist lock type; 10 amps., 125 volts; dimensions 1" diam., 1.187" long; encased in rubber cover.	Part of W-103	18 7461 7470 P191-B67	1615
R-101		POTENTIOMETER: Wire wound; 0-25000 ohms, 2 watt; 1/8" screwdriver adjustment shaft; 3/8"-32 thread mtg. stud; O.A. dimensions, 1-17/32" long, 1-5/64" diam. including lugs.	Frequency control R C Osc. V-101	19 58-25K	1846 JAN-R-19

TABLE 7-1 TABLE OF REPLACEABLE PARTS

MAJOR ASSEMBLY — TEST SET TS — 387 /U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
R-102		POTENTIOMETER: Wire wound; 0-300 ohms, 2 watt; 1/8" diam. screwdriver adjustment shaft, 3/8"-32 thread mtg. stud. O.A. dimensions, 1-17/32" long, 1-5/64" diam. including lugs.	A-F volume control. Cathode V-101 to grid V-103	19 58-300	1847 JAN-R-19
R-103	R16-R-17352-3-10	RESISTOR: Fixed; carbon 220,000 ohm ±10%, 1 watt; .562" long, .225" diam; .041" axial leads 1-1/2" long.	Plate V-101	48 GB2241 RC30AF-224K	1848 JAN-R-11
R-104		Same as R-103	Grid V-102		
R-105	R16-R-17281-170-25	RESISTOR: Fixed; carbon 4700 ohm ±10%, 1 watt; .562" long, .225" diam; .041 axial leads 1-1/2" long.	Cathode bias V-102	48 GB4721 RC30AF-472K	1849 JAN-R-11
R-106	R16-R-17310-43-13	RESISTOR: Fixed; carbon; 12,000 ohms ±10%, 1 watt; .562" long, .255" diam; .041" axial leads 1-1/2" long.	Cathode bias V-102	48 GB1231 RC30AF-123K	1850 JAN-R-11
R-107	R16-R-17382-450	RESISTOR: Fixed; carbon; 1 megohm ±10% 1 watt; .562" long, .255" diam; .041" Axial leads 1-1/2" long.	Screen V-102	48 GB1051 RC30AF-105K	1851 JAN-R-11
R-108		Same as R-103	Plate V-102		

TABLE 7-1 TABLE OF REPLACEABLE PARTS

MAJOR ASSEMBLY — TEST SET TS — 387 /U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
R-109	R16-R-17354-14-218	RESISTOR: Fixed; carbon; 470,000 ohm ±10%, 1 watt; .562" long, .225" diam.; .041" axial leads 1-1/2" long.	Grid V-103	48 GB4741 RC30AF-474K	1853 JAN-R-11
R-110	R16-R-17279-1-16	RESISTOR: Fixed; carbon 3300 ohms ±10%, 1 watt; .562" long, .225" diam.; .041" axial leads 1-1/2" long.	Cathode bias V-103	48 GB3321 RC30AF-332K	1875 JAN-R-11
R-111		Same as R-107	Screen V-103		
R-112		Same as R-103	Plate V-103		
R-113		Same as R-109	Grid V-104		
R-114	R16-R-17263-31-7	RESISTOR: Fixed; carbon; 390 ohm ±10%, 1 watt; .562" long, .225" diam.; .041" axial leads 1-1/2" long.	Cathode bias V-104	48 GB3911 RC30AF-391K	1876 JAN-R-11
R-115	R16-R-17274-23-25	RESISTOR: Fixed; carbon; 2200 ohms ±10%, 1 watt; .562" long, .225" diam; .041" axial leads 1-1/2" long.	Output voltage dropping resistor	48 GB2221 RC30AF-222K	1880 JAN-R-11
R-116	R16-R-17328-222-25	RESISTOR: Fixed; carbon; 39,000 ohm ±10%, 1 watt; .562" long, .225" diam.; .041" axial leads 1-1/2" long.	Output voltage dropping resistor to headset.	48 GB3931 RC30AF393K	1881 JAN-R-11

TABLE 7-1 TABLE OF REPLACEABLE PARTS

MAJOR ASSEMBLY — TEST SET TS — 387 /U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
R-117	R16-R-17264-15-11	RESISTOR: Fixed; carbon; 560 ohms ±5%, 1 watt; 3/4" long, 1/4" diam.; .040" axial leads 1-1/2" long.	T-Pad arm	181 S1-1 RC30AF561J	1877
R-118		Same as R-117	T-Pad arm		
R-119A	R16-R-17259-42-11	RESISTOR: Fixed; carbon; 51 ohms ±5%, 1 watt; 3/4" long, 1/4" diam; .040" axial leads 1-1/2" long.	T-Pad leg	181 S1-1 RC30AF510J	1878 JAN-R-11
R-119B	R16-R-17256-56-15	RESISTOR: Fixed; carbon; 10 ohms ±10%, 1 watt; 3/4" long, 1/4" diam; .040" axial leads 1-1/2" long.	T-Pad leg	181 S1-1 RC30AF100K	1879 JAN-R-11
R-120		RESISTOR: Ballast tube; ST-14 bulb; resistance 2.4 ohms ±5%; hot current 10 amps; operating time 30 seconds max.; Octal wiring prongs, #2 & #3 one lead, #7 & #8 the other lead.	Flying Suit ballast tube	182 R2D4	2219
S-101		SWITCH: Selector; 6 section, 2 circuit 5 position; ceramic wafers, shorting type; 3/8" mtg. bushing; 1/4" shaft extends 1/2" from bushing; O.A. 2" diam. x 4-1/4" long.	Selector switch	1 P191-B59	1912

TABLE 7-1 TABLE OF REPLACEABLE PARTS

MAJOR ASSEMBLY — TEST SET TS — 387/U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
S-102		SWITCH: Push button; DPDT; 3 amps., 125 volts; 3/8"-32 mtg. stud; soldering lug terminals; black bakelite push button; O.A. dimensions 2-1/4" x 1-3/4" including lugs.	Headset Rattle	50 043P Non-locking 1 Form C	1913
S-103		SWITCH: Push button; SPST: normally open; 10 amps., 24 volts; 7/16" mtg. stud; O.A. 1-7/8" long, 7/8" diam.	Flying Suit Current	118 2201 No	1914
S-104	R17-S-28233-73	SWITCH: Toggle; DPST: 3 amps. at 125 volts; bat handle; moulded phenolic case; 7/16" mtg. stud; soldering lug terminals.	Line	116 82304	199 JAN-S-23
T-101		TRANSFORMER: Flying Suit; primary 115 volts, 2.2 amps, 50/1600 cps, .71 ohms; 248 turns #16 wire; Secondary, 10 amps, 24 volts, .049 ohm; 54 turns #10-1/2" wire; can size, 5-1/8" long, 4-3/8" wide, 5-1/8" high; 4 soldering lug terminals; four 10-32 mtg. studs.	Flying Suit	11 14127 P191-B65	2015 JAN-T-27

TABLE 7-1 TABLE OF REPLACEABLE PARTS

MAJOR ASSEMBLY — TEST SET TS — 387/U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
T-102		TRANSFORMER: Primary, 57.5 volts, 2.35 ohms, 50/1600 cps; 274 turns #22 wire. Secondary, 20 volts, .269 ohm, 2.5 amps; 100 turns #17 wire. 1500 volts test to ground; can size 3-3/8" long, 3-3/16" wide, 4-1/16" high. Four 10-32 mtg. studs; 4 soldering lug terminals.	Bucking transformer	11 13695 P191-C66	209 JAN-T-27
T-103		VARIAC: Input voltage 115 volts; output 0-115 volts, center tapped, 1 amp; dimensions 3-1/2" diam., 2-7/8" deep, 3/8" shaft extends 13/16" from face; three 8-32 mtg. holes 120° centers, 1-1/4" radius.	Voltage regulator	100 200BS17	2016
T-104		TRANSFORMER: Power; primary 115 volts, 6.8 ohms, 50/1600 cps; 444 turns #25 wire. Sec. #1, 225-0-225 volts, .065 amp., 180 ohms; 1850 turns #33 wire CT. Sec. #2, 6.3 volts, 1.0 amp. .157 ohm; 26 turns #21 wire. Sec. #3, 6.3 volts, 1.5 amps., .099 ohm; 26 turns #19 wire. 1500 volts test to ground. Can size, 3-3/8" long, 3-1/8" wide, 4" high; four 10-32 mtg. studs; 9 soldering lug terminals.	Power	11 13748 P191-C64	2011 JAN-T-27

TABLE 7-1 TABLE OF REPLACEABLE PARTS

MAJOR ASSEMBLY — TEST SET TS — 387/U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
T-105		TRANSFORMER: Audio output; operation from 4000 ohms (6V6) to 600 ohms; turns ratio, prim. to sec. 2.68:1; Prim. 1860 turns #36 wire; Sec. 720 turns #34 wire; 57 ohms D-C resistance; can size, 1-7/8" long, 1-5/8" wide, 2-1/2" high; four 6-32 mtg. studs; 4 soldering lug terminals.	A-F output	11 13749 P191-B61	2017 JAN-T-27
V-101	16-T-56492	TUBE: 6N7GT; Audio Oscillator.	R.C. Osc.	4 JAN-6N7GT	2217 JAN-1A
V-102	16-T-56665	TUBE: 6SJ7; Audio	A-F amplifier	4 JAN-6SJ7	2215 JAN-1A
V-103		Same as V-102	A-F amplifier		
V-104	16-T-56758	TUBE: 6V6GT; Audio output	A-F power amplifier	4 JAN-6V6GT	2216 JAN-1A
V-105	16-T-56855	TUBE: 6X5GT; Rectifier	Rectifier	4 JAN-6X5GT	2213 JAN-1A
W-101		CABLE: Carbon microphone, 2'6" long; conductor, #22-2 unshielded, synthetic rubber covered, .216" O.D. J-110 on one end.	Carbon mic.	1 236 P191-B60	236

TABLE 7-1 TABLE OF REPLACEABLE PARTS

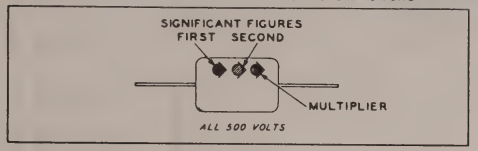
MAJOR ASSEMBLY — TEST SET TS — 387 / U

REFERENCE SYMBOL	ARMY STOCK NO NAVY STOCK NO	NAME OF PART and DESCRIPTION	FUNCTION	MFGR and DESIG or AWS TYPE	CONT or GOVT DWG or SPEC NO
W-102		CABLE: Headset; 2'6" long; #18-2 conductor, shielded, J-111 on one end.	Headset	1 237 P191-B63	237
W-103		CABLE: Flying Suit; 3'6" long; #16-2 conductor Type SJ; P-103 one end; other end outer covering cut back 1'4".	Flying Suit	1 238 P191-B67	238
W-104		CABLE: A-C; Type S conductor #18-2 10'0" long; P-101 on one end, P-102 on other.	Power	1 239	239
X-101	R16-S-6187	SOCKET: Tube; moulded in plate; standard octal; 8 contacts; mtg. holes 1-5/32" diam; screw mtg. holes 5/32" diam. 1-1/2" centers.	Hold V-101	14 MIP8	241
X-102		Same as X-101	Hold V-102		
X-103		Same as X-101	Hold V-103		
X-104		Same as X-101	Hold V-104		
X-105		Same as X-101	Hold V-105		
X-106		Same as X-101	Hold C-111		
X-107		Same as X-101	Hold R-120		

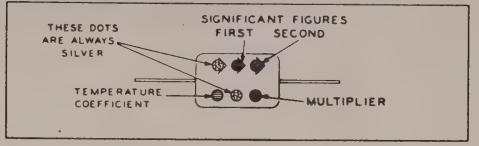
Tabel 7-2 Applicable Color Code and Miscellaneous Data

CAPACITOR COLOR CODES

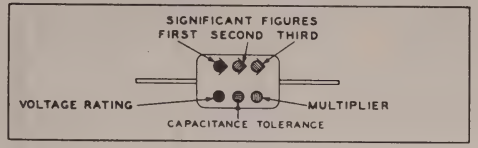
RMA 3-DOT COLOR CODE FOR MICA-DIELECTRIC CAPACITORS



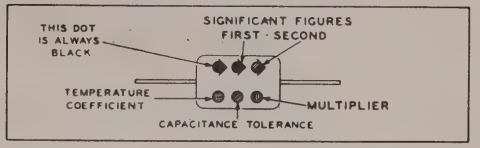
JAN 6-DOT COLOR CODE FOR PAPER-DIELECTRIC CAPACITORS



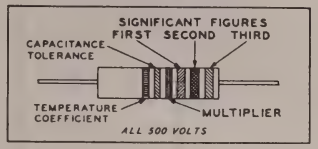
RMA 6-DOT, COLOR CODE FOR MICA-DIELECTRIC CAPACITORS



JAN 6-DOT COLOR CODE FOR MICA-DIELECTRIC CAPACITORS

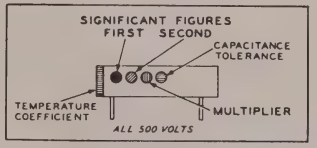


RMA COLOR CODE FOR TUBULAR CERAMIC-DIELECTRIC CAPACITORS

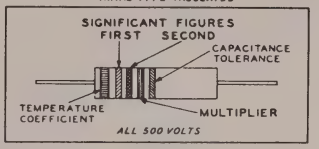


JAN COLOR CODE FOR FIXED CERAMIC-DIELECTRIC CAPACITORS

RADIAL TYPE NON-INSULATED



AXIAL TYPE INSULATED



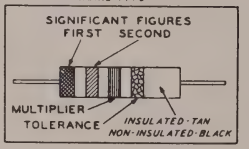
RMA: RADIO MANUFACTURERS ASSOCIATION
JAN: JOINT ARMY-NAVY

RESISTORS		CAPACITORS						
				MULTIPLIER				
TOLERANCE	MULTIPLIER	SIGNIFICANT FIGURE	COLOR	RMA MICA AND CERAMIC-DIELECTRIC	JAN MICA AND PAPER-DIELECTRIC	JAN CERAMIC DIELECTRIC	VOLTAGE RATING	TEMPERATURE COEFFICIENT
	1	0	BLACK	1	1	1		A
	10	1	BROWN	10	10	10	100	B
	100	2	RED	100	100	100	200	C
	1,000	3	ORANGE	1,000	1000	1000	300	D
	10,000	4	YELLOW	10,000			400	E
	100,000	5	GREEN	100,000			500	F
	1,000,000	6	BLUE	1,000,000			600	G
	10,000,000	7	VIOLET	10,000,000			700	
	100,000,000	8	GRAY	100,000,000		0.01	800	
	1,000,000,000	9	WHITE	1,000,000,000		0.1	900	
5	0.1		GOLD	0.1	0.1		1000	
10	0.01		SILVER	0.01	0.01		2000	
20			NO COLOR				500	

RESISTOR COLOR CODES

RMA COLOR CODE FOR FIXED COMPOSITION RESISTORS

AXIAL TYPE



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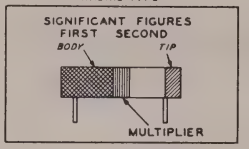
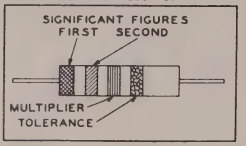


JAN COLOR CODE FOR FIXED COMPOSITION RESISTORS

AXIAL TYPE INSULATED



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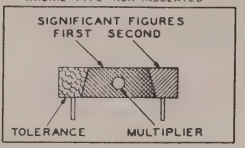


Table 7-3. LIST OF MANUFACTURERS

Code No.	Mfg. Prefix	Name	Address	
1	CGZ	General Communication Co.	681 Beacon Street	Boston, Mass.
4	CRV	R.C.A. Victor Division		Harrison, N. J.
6	CAM	Aerovox Corp.	740 Belleville Ave.	New Bedford, Mass.
11	CFX	Freed Transformer Co.	72 Spring Street	New York, N. Y.
14	CPH	American Phenolic Corp.	1830 So. 54th Ave.	Chicago, Ill.
15	CFA	Bussman Mfg. Co.	University at Jefferson	St. Louis, Mo.
16	CASX	Gothard Mfg. Co.	1300 N. Ninth St.	Springfield, Ill.
18	CHU	Harvey Hubbell Inc.	447 Concord Ave.	Bridgeport, Conn.
19	CMC	Clarostat Mfg. Co.	285-287 N 6th St.	Brooklyn, N. Y.
48	CBZ	Allen Bradley Co.	118 W. Greenfield Ave.	Milwaukee, Wisc.
50	CDN	Donald P. Mossman Co.	6021 N. Northwest Highway	Chicago, Ill.
60	CMH	Am. Radio Hardware Co.	476 Broadway	New York, N. Y.
75		Chandler & Farquhar	900 Commonwealth Ave.	Boston, Mass.
88	CG	General Electric Co.		Schenectady, N. Y.
100	CAG	General Radio Co.	30 State Street	Cambridge, Mass.
116	CHH	Arrow-Hart & Hegeman	103 Hawthorne St.	Hartford, Conn.
118		Grayhill	1 N. Pulaski Rd.	Chicago, Ill.
180	CTE	Telephonics Inc.	350 W. 31st St.	New York, N. Y.
181	CPQ	Speer Resistor Co.	Theresia St.	St. Marys, Pa.
182	CAGK	Amperite Co.	561 Broadway	New York, N. Y.
185		Eastern Etching Co.	Foot of Grape St.	Chicopee, Mass.
205	CLW	Leviton Mfg. Co.	236 Greenpoint Ave.	Brooklyn, N. Y.
206	CAGT	Walter L. Schott Co.	537 S. Dearborn St.	Chicago 5, Ill.

SECTION VIII DRAWINGS

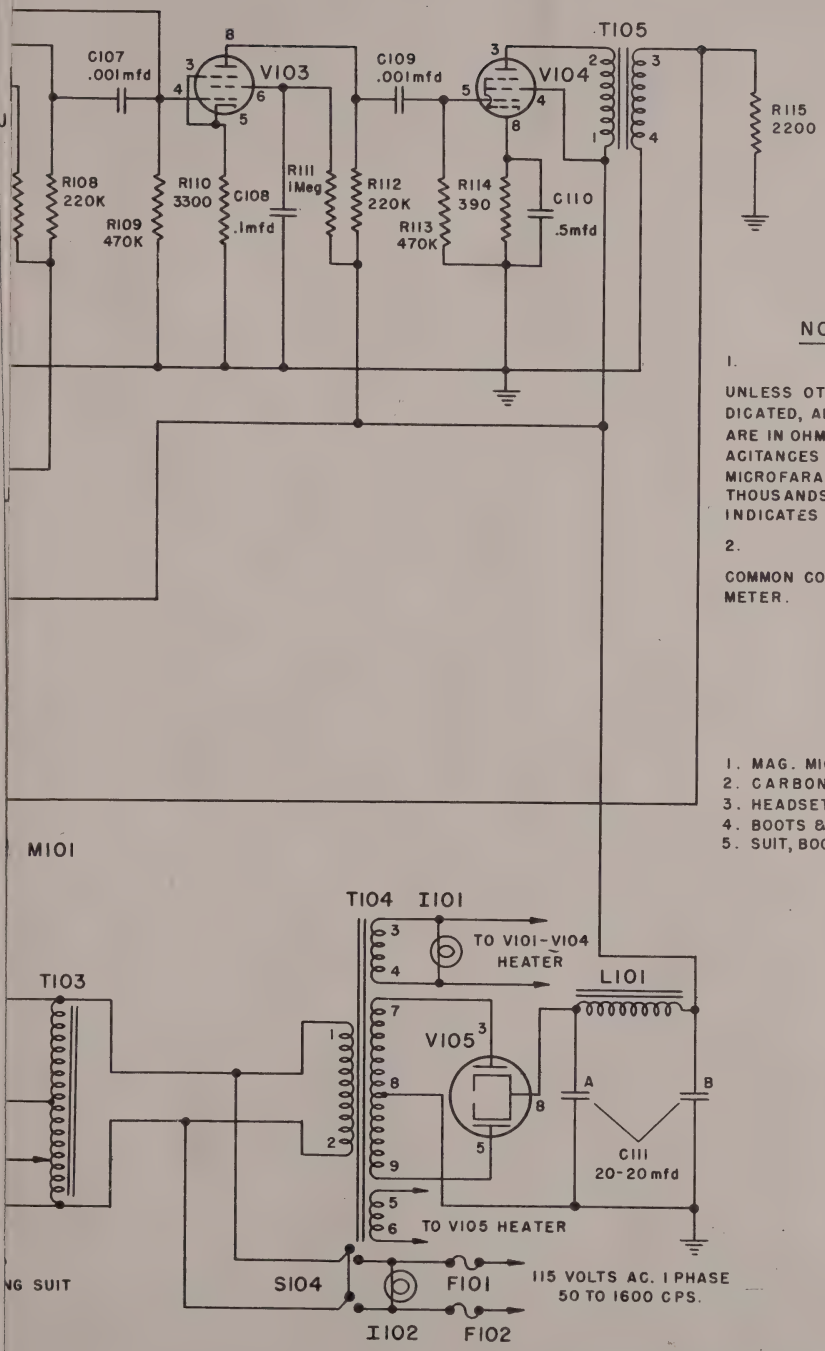
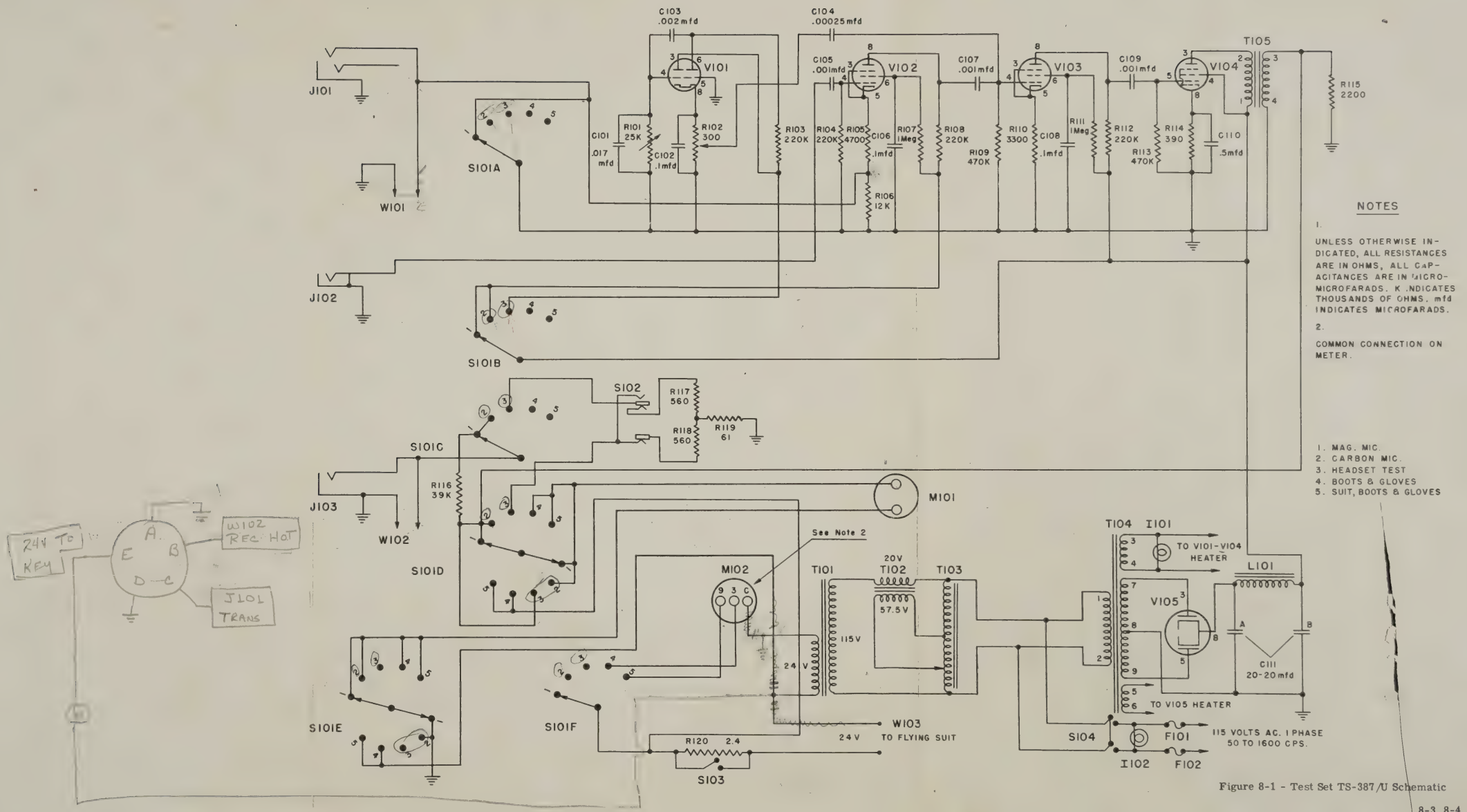


Figure 8-1 - Test Set TS-387/U Schematic



NOTES

1.

UNLESS OTHERWISE INDICATED, ALL RESISTANCES ARE IN OHMS, ALL CAPACITANCES ARE IN MICRO-MICROFARADS. K INDICATES THOUSANDS OF OHMS. mfd INDICATES MICROFARADS.

2.

COMMON CONNECTION ON METER.

1. MAG. MIC.
2. CARBON MIC.
3. HEADSET TEST
4. BOOTS & GLOVES
5. SUIT, BOOTS & GLOVES

Figure 8-1 - Test Set TS-387/U Schematic

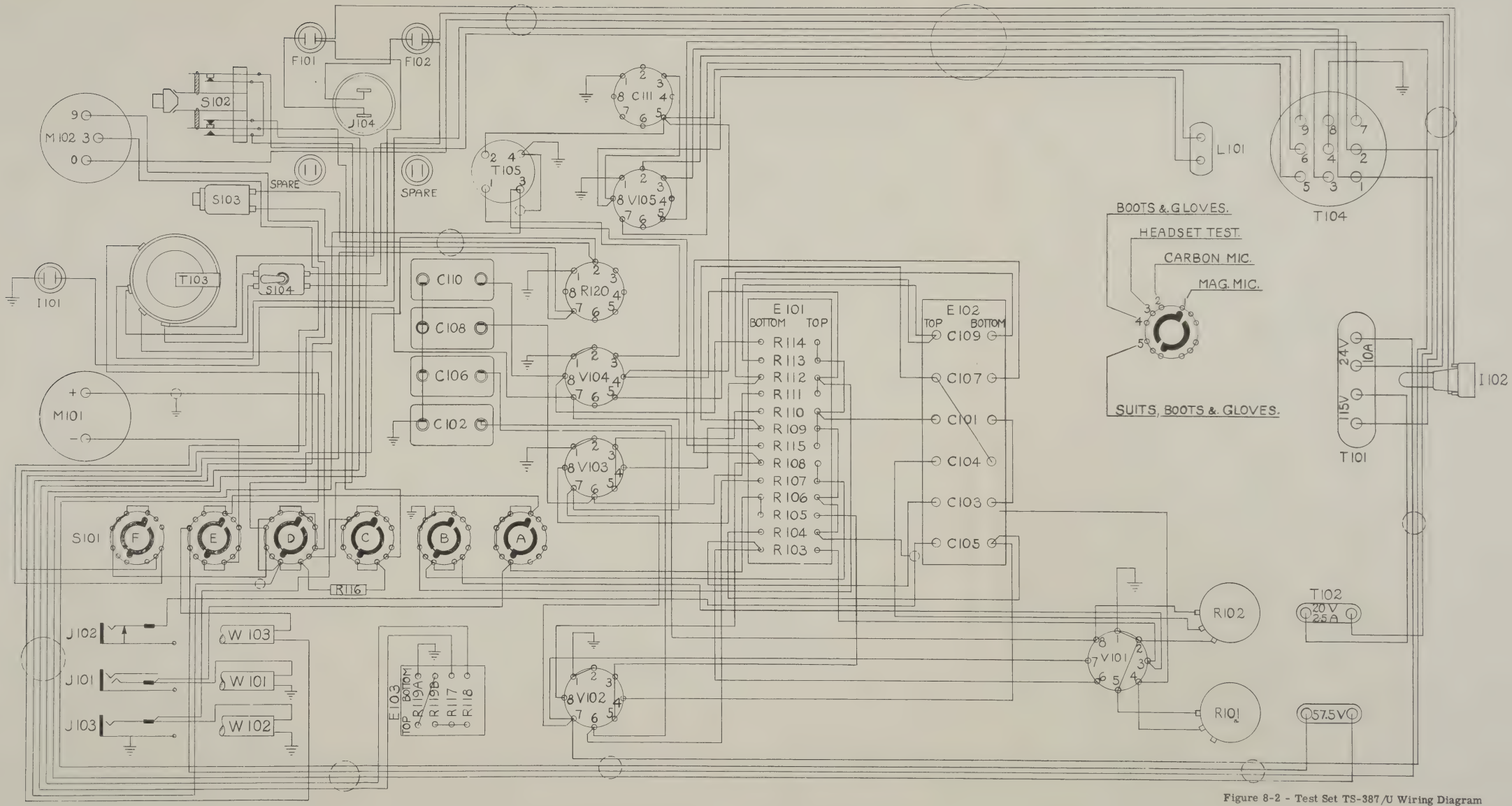


Figure 8-2 - Test Set TS-387/U Wiring Diagram

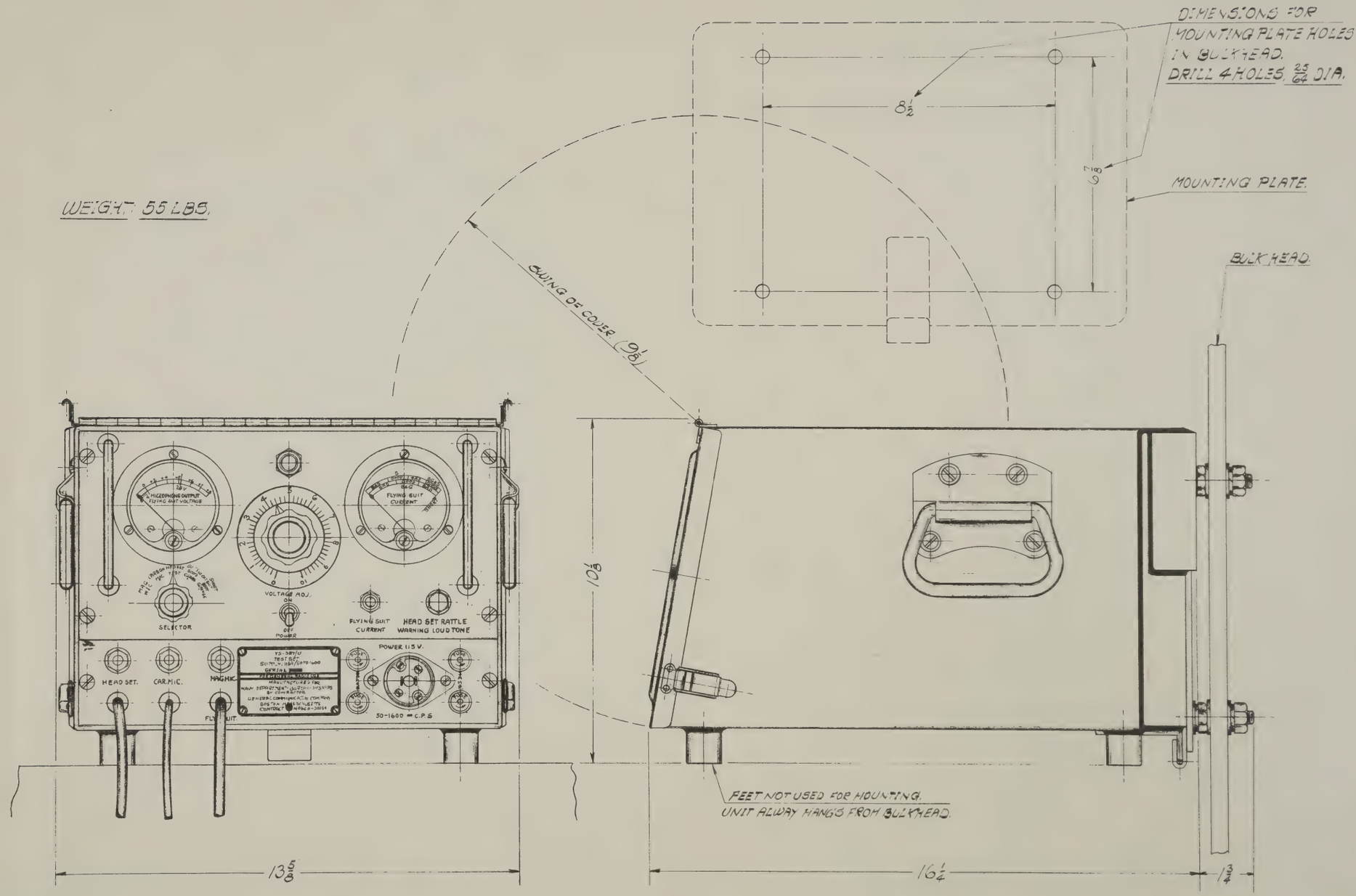


Figure 8-3 - Test Set TS-387/U Outline and Dimensional Drawing

	Figure	Page
A		
Adjustments		2-1
Ammeter	3-1	3-0
		4-0
Amperes, Minimum and Maximum		4-0
Amplifier Control		4-1
Amplifier Switch		4-1
Audio Amplifier		1-1
Audio Oscillator		1-1
B		
Bulb, Heating (I-102)	6-2	5-1
Bulb, Heating (I-102) Lighting of		2-1
Bulb, Heating, Purpose of		5-1
C		
Cable Power		1-1
Cable Power Supply		1-1
Checks, Pre-Operational		3-1
Color Code for Resistors and Capacitors		7-19
E		
Electrical Circuitory		1-1
Equipment, Description of	1-1	1-1
Equipment, Function of		1-1
Equipment, Measurements	8-3	1-1
Equipment, Required but Not Supplied		1-1
Equipment, Space Required for Installation	8-3	1-1
Equipment, Supplied		1-1
Equipment, Starting of		3-1
Equipment, Starting Power Requirements		3-1
Equipment, Weight of	8-3	1-1
F		
Flying Suit Current Button	3-1	3-1
Flying Suit Test		5-0
Frequency, Checking of		5-0
Front Panel Controls	3-1	3-1
Fuses, Checking		5-0
G		
General Description		1-1
Guarantee		iv
H		
Headset Rattle Button		3-2
Headset Rattle Button Test		3-2
Headset Rattle Button Warning		3-2
Headset Test		3-2
I		
Inspection		2-1
Installation and Adjustment		2-1
L		
Line Voltages		1-1
		3-1
M		
Maintenance		5-0
Manufacturers Listing		
Microphone Carbon	8-1	3-2
	8-2	
Microphone and Handset Circuit		
Microphone Magnetic		3-2
Mounting	2-1	2-1
Mounting to Bulkhead	2-1	2-1
Mounting Plate	2-2	
1000 ohm-per-volt Multimeter TS-297/U		5-0
20,000 ohm-per-volt Multimeter TS-352/U		5-0

	Figure	Page
O		
Operating Controls, Description and Function		3-1
		3-2
Operation		3-1
Operation, Theory of		4-0
Oscillator Section V-101		4-1
P		
Pilot Light I101		6-1
Potentiometer R101, R102		6-1
Power Output, Checking of		5-1
Power Requirements		1-1
Purpose of Equipment		1-1
Purpose of Hand Book		1-1
R		
Rheostat R101	6-1	
Replaceable Parts, Table of		
Reports, Unsatisfactory		iii
Resistances, Checking		5-2
Resistor, R120 Shorting of	6-1	4-0
Resistor R120		4-0
Revised Pages		A
S		
Screws Captive		1-1
Selector Switch	6-3	3-1
Short Circuit in Boots		3-1
		3-2
Short Circuit in Cable		3-1
		3-2
Short Circuit in Flying Suit		3-1
		3-2
Short Circuit in Gloves		3-1
		3-2
Short Circuit Indicated		3-1
		3-2
Short Circuits, Possible Locations		3-1
		3-2
Short Tests		3-1
		3-2
Short Tests, Boots Required		3-1
		3-2
Short Tests, Flying Suit Required		3-1
		3-2
Suit Switch		3-1
		3-2
Supplementary Data		6-1
Supply Line		4-0
T		
Test Equipment Required		5-0
Transformer (T101)	6-1	
Transformer (T102)	6-1	
Transformer Replacement of		5-1
Tube, Complement		1-2
Tube Series Resistance R120	6-1	5-1
		5-2
Tubes, Checking		5-1
T-Pad		4-0
U		
Unpacking		2-1
V		
Variac (T103)		5-1
Variac, Function of		5-1
Variac, Replacement of		5-1
Voltage Adjustment		2-1
Voltage Control		2-1
Voltage, Checking		5-1
VT Voltmeter TS-375/U		5-0